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Improvement of the Milk Supply*

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ABOUT two years ago the New York Milk Committee, recognizing the chaos that prevailed in the milk business, and recognizing that one of the reasons for this chaos was a lack of standards, decided that they would appoint a Milk Standards Commission, this commission to be composed of men who had had experience with milk in different ways, in order that each might bring to the work of the commission his point of view, and with the idea that that presentation would be of service in arriving at conclusions.

The idea was that, this report having been made, ordinances and laws would be adopted, drawn along the general lines of the report, and that if then it should be found that there were features of the report that did not work well, modification would ensue. It was not thought that one general statute, or one general ordinance, could be drawn applicable to all parts, of the country, since that which has made the milk question difficult to handle has been the fact that it does not enter into general commerce, the reason being that there is so much of variation between the different communities and so many things that make it impossible for the supply of one community to be available to any large extent for any other community. In other words, one of the factors that has worked against getting milk on the same commercial basis that other commodities are on is the fact that milk problems are flavored or tinctured by local conditions. Nevertheless, it was thought that gain would be had if there could be a certain thread of uniformity, on which variation would be made to suit the peculiarities of different communities. This was as much as the New York Milk Committee had in mind in the selection of this Milk Standards Commission.

Some two hundred names were submitted for membership on the commission and out of that number approximately twenty were selected, most of whom have remained with the commission during its two years' of existence. The membership commission, as at present constituted, is as follows:

Dr. B. L. Arms, who at that time was an assistant in the department of biology and public health of the Massachusetts Institute of Technology, and director of the laboratories of the Health Department of Boston, now director of the laboratories of the Health Department of the State of Oregon; Dr. John F. Anderson, director of the Hygienic Laboratory

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of the United States Public Health Service, Washington, D. C.; Prof. H. W. Conn, Director of the Bacteriological Laboratory of the Connecticut State Board of Health; Dr. E. C Levy, Health Officer of Richmond, Va.; Dr. A. D. Melvin, Chief of the Bureau of Animal Industry of the Department of Agriculture; Dr. Wm. H. Park, Director of Laboratories, Department of Health of the City of New York; Mr. Raymond A. Pearson, President of the Iowa State College, Ames, Iowa; Dr. M. P. Ravenel, Director of the Hygienic Laboratory of the University of Wisconsin; Prof. M. J. Rosenau, Professor of Hygienic and Preventive Medicine, Harvard Medical School; Mr. Chester H. Wells, Health Officer, Montclair, N. J.; Prof. Henry C. Sherman, of the Department of Chemistry, Columbia Univeristy, New York City; Dr. L. L. Van Slyke, of the Department of Chemistry of the New York Agricultural Experiment Station; Dr. Charles E. North, Consulting Sanitarian, a member of the New York Milk Committee, and Secretary of the Commission; Dr. J. N. Hurty, Secretary of the State Board of Health, Indianapolis, Ind.; Dr. Joseph S. Neff, Director of the Public Health Department of Philadelphia, Pa.; Dr. John S. Fulton, Director of the State Department of Health, Baltimore, Md.; and myself.

As you will notice, the veterinarian interests are represented by Doctor Melvin, and I think fairly also by Doctor Ravennel; the health departments, by several secretaries of state boards of health, by health officers of large communities—for instance, Chicago, New York and Philadelphia; of middle-sized communities, such as Richmond, Va.; and of small communities by Mr. Wells of the Department of Health, of Montclair, N. J. The U. S. Public Health Service is represented by Doctor Anderson. Various agricultural colleges are represented by President Pearson, of the Iowa State College, and by Prof. Stocking of Cornell, and Prof. Van Slyke. After two years of deliberation the committee issued a report with the understanding that that report would be distributed by the Public Health Service. It was so distributed in May, 1912. After many thousands of copies had been distributed and after requests for opinions had been replied to from many different sources, the commission was again called together with the view of amending the report in the light of the year's experience.

The meeting for the consideration of the report for its revision, with a view to final publication, was held at Richmond in April. The report was issued on August 22, 1913, and is to be found in the Public Health Reports for that date. It may be had by writing to the United States Public Health Service, Washington, D. C.

Now, I am going to read a few of the subjects covered in this report, those that are of particular interest to the gentlemen who constitute this organization; and then I am going to speak to three of those subjects, not to the report in its entirety, but to three of the points that are covered in the report.

The sections that I have marked to be read are the following: The preamble begins with these words:

> Proper milk standards, while they are essential to efficient milk control by public health authorities, and have as their object the protection of the milk consumer, are also necessary for the ultimate well-being of the milk industry itself. Public confidence is an asset of the highest value in the milk business. The milk producer is interested in proper standards of milk since these contribute to the control of bovine tuberculosis and other cattle diseases and distinguish between the good producer and the bad producer.

I will now read some more along the same line. The reason for introducing this is that I am presently going to say something about the failure of the milk business to develop as it should, which in some measure is the result of a lack of uniform conditions in the different communities they say:

> These are the results of a study of the printed rules and regulations of the cities of the United States and of foreign countries and represent an immense amount of work on the part of the special commission to which the task was assigned. Some communities are in a position to adopt all of these rules and regulations at the present time, while other communities will be obliged to adopt a few rules at a time as public sentiment and local condition warrant. It is realized that some of the rules will have to be modified to meet local conditions.

One of the criticisms that the report

has been subjected to is the fact that the rules better fit the conditions in large cities than they do those in small cities. That would mean this, that it is possible for a small city to have better milk supply than a large one. As a general proposition I think it is true that small communities have worse milk supplies than large communities. That is by reason of the fact that they make no effort to control their milk supplies. When they do make such efforts, it is found that it is relatively easy to control them in small communities as compared with large communities. Therefore certain bacterial standards to which I shall presently refer, while they are the bacterial standards that we have to compromise on when we are dealing with the large community, should not obtain in the small community; the small community can do infinitely better.

You will understand that the milk as it comes from a cow is comparatively free from bacteria; it is usually of low bacterial count. Occasionally there is found a cow giving milk containing many thousand bacteria as it issues from the udder. As a general proposition, however, the bacterial content of newly drawn milk is low. There are certain ferments that develop in milk shortly after it is drawn, the nature of which we know very little about, which are, however, bactericidal. They are something more than restraining in their action on bacteria; they seem to be bactericidal, so that at the end of six hours there are fewer bacteria in the milk than there were at the time it was drawn—that is, in milk that has been well kept. This ferment action is a self-limited action, so that after about six hours it ceases to operate and bacterial multiplication begins in earnest.

The communities, therefore, that have their cows close up to their babies, that have the mouth of the baby in close juxtaposition to the cow, have no great difficulty in securing milk of a low bacterial count. Whenever you begin to interpose between the baby and the teat any sort of foreign circumstance or happening, you increase the number of bacteria that you must have in milk, from which there seems to be no practical escape. If the milk is produced on the premises where it is consumed, and if any sort of effort is made to secure healthy cows, the milk under those circumstances is very much cleaner, very much better and very much more wholesome than milk that is produced under any other circumstance. If the milk is produced a few miles away in the country, so that it needs to be hauled but a short distance, handled by few people—the people who produce and the people who consume, let us say—but one wagon intervening between the cow and the baby, a delivery, let us say, so that much of the milk is consumed before it is six hours old and all of it is consumed before it is twelve or fourteen hours old, under those circumstances you can demand and can secure very much lower bacterial counts than are set by this commission. You will understand that a bacterial standard is not an absolute thing; it is merely a measure by which the sources of the milk are to be judged; and if a milk that is but a few hours old and that has been handled by but few people has a high bacterial count, it means that the conditions under which it was produced and under which it has been kept have been almost unspeakably bad. If, however, the milk is a day or more old, has been hauled fifty or more miles, has been hauled in a railroad train and by two or more wagons it may have a hundred thousand bacteria without it indicating that there has been gross negligence at any point along the line. Therefore those bacterial standards are to be taken in this light; a community that cannot secure better than two hundred thousand as its standard of bacterial count, will be fair or moderately fair to the children who consume cow's milk, if they allow that to be the standard of their

community. If, however, a community has cows kept on the premises, or cows within four or five miles of town, and a double daily delivery of milk, it would not be at all fair to those babies if the health department were to allow a count of two hundred thousand.

Classification of Milk

There is no escape from the conclusion that milk must be graded and sold on grade, just as wheat, corn, cotton, beef and other products are graded. The milk merchant must judge of the food value and also of the sanitary character of the commodity in which he deals. The high-grade product must get a better price than at present. The low-grade product must bring less.

I do not know how it came about, but there is considerable public opinion that milk should be classed as milk, and that no adjectives should be applied to milk. This is difficult for me to understand, because in the whole range of commerce there is not another thing within my knowledge that is bought and sold that is not graded and classified. It is true of cotton, where we have all sorts of titles and adjectives applied to it; it is true of wheat, it is true of meat; it is true of lard; it is true of calico; it is true of silk; it is true of iron, of steel, of cars, and of elephants. Everything that is bought and sold is graded and classified except milk, and why anyone could assume that this particular commodity could thrive on a commercial basis, violating that which is a proven and fundamental rule of commerce, I have never been able to understand. It seems to me that one of the necessities, if the milk business is to thrive, is that milk should be made to conform, just as far as it is possible for it to conform, to the ordinary commercial lines, and where it does not automatically conform to such commercial lines there should be such regulation and control as would cause it to travel in those grooves where it has been demonstrated that business best prospers.

Bacteria

The subject of bacteria in milk received more attention than any other matter brought before the commission. The commission recognizes that bacteria in milk in the majority of instances indicate dirt or lack of refrigeration or age, while in the minority of instances the bacteria of disease may be present. The routine laboratory methods of examining milk have as their purpose only the control over dirt, refrigeration, and age, and it is a rare thing for a laboratory to undertake the examination of milk for the bacteria of disease because of the extreme difficulties in detecting them. The more efficacious method of protecting milk from infection by the bacteria of human contagion is by medical, veterinary, and sanitary inspection, and by pasteurization. Milk with a high bacteria count is not necessarily harmful, but when used as a food particularly for children is a hazard too great to be warranted. Milk with a high bacteria count, therefore, should be condemned. Milks with small numbers of bacteria are presumed to be wholesome, unless there is reasonable ground for suspecting that they have been exposed to contagion.

I now come to the subject of "Laboratory Examination for Bacteria."

I am going to digress far enough to say that we are not infrequently disturbed by the perfection of certain laboratories; for instance, Dr. Mohler's laboratory. We get an idea that the laboratory is not a laboratory unless it has the equipment in men and instruments that these better-developed laboratories have. We are stopped by this conception of a laboratory from undertaking work in our smaller communities, those communities that cannot afford the more complete equipment that is to be found in such laboratories. Let me suggest that there is no community that is large enough to afford a public school that is not large enough to afford a laboratory for the examination of milk, at least

insofar as sanitary considerations are concerned. The equipment required is simple, and for certain procedures the technical training required is hardly worthy of consideration. As you gentlemen very well know, the simple Babcock instrument has now carried the testing of butter fat in milk to the farm so that it is done by the farmer's son and not infrequently by the thoroughly untrained farmer himself. There is a fair method of testing the sanitary quality of milk that is even simpler than the application of the Babcock test, and that is the dirt test—the filtering of a given quantity of milk through a filter for the purpose of disclosing the amount of dirt that is in that sample. For instance, the milk having been thoroughly agitated, a pint is removed therefrom, and that pint is filtered, and the amount of dirt caught on the filter is held for purposes of demonstration and education. Milk can be filtered through a pledget of cotton; it can be filtered cold—however, it filters better warm; it can be filtered with no apparatus at all except a funnel and a pledget of cotton. That is rather slow and we will be better satisfied all around if we have a little bit more apparatus than that. In the city of Chicago we have been using an ordinary plain, simple filter with a pledget of cotton in the bottom of the filter; that filter runs into a vacuum bottle, and in that vacuum bottle a small degree of vacuum, or low pressure is maintained. You can get enough vacuum by merely attaching this vacuum bottle to a current of running water; so that any place that has running water has about all of the equipment that is needed for the making of the dirt test. For a while we had our men equipped with a large rubber bulb that would hold about a pint and they would create a slight degree of vacuum in that bottle by simply exhausting the air with the bulb. I am going into these little details, because they show that not much apparatus is required for the dirt test. Certainly it would be easy indeed to equip the laboratory of your public school with the Babcock test; and you could not do a better thing for the milk supply of your community and for the people of the community and for the children themselves than to have them periodically and systematically examine the milk supplies of your community with the Babcock test. Some of you here I am sure have had experience as school teachers. You will understand the advantage from the pedagogic standpoint of using for the purposes of study something in which there is a human or personal interest. Therefore your children in school will learn very much more about the question of fat and certain chemical questions, if they use things that they bring from their homes, than if they use things that appeal to them altogether from a didactic standpoint. The same thing is true of the dirt test. There is no reason why the students of the public schools should not regularly and systematically apply the dirt test to the milk supply of their community.

Now, a bacterial count—that is to say, a quantitative count—is a matter of somewhat greater difficulty. It requires a little more experience, but very little more of equipment. If the counts are to be made at incubator temperatures, an incubator can be constructed at very small cost. You are to remember that the miscroscope required for a quantitative bacterial count is a very low-power microscope, and therefore the expensive microscope equipment that you ordinarily have in mind when you think of bacterial work is not required for the quantitative counts of milk or water or other substances in a community. Without going into further detail, it would be easily possible for the senior grades in your local schools to carry out bacterial examinations of the milk supplies of those communities. I mean now quantitative examinations, and that is about all that we put very much stress upon. As a practical administrative matter we do not get very much from qualitative examinations of milk.

There are a few bacteria pathogenic

for the human being that have been demonstrated in milk. The best known of these is the tubercle bacillus. You heard Doctor Park tell his story last night, how they found that about 12 per cent of the milk supply in New York City contained tubercle bacilli. Quite uniformly those tubercle bacilli are virulent for guinea-pigs. You heard his further statement that the proof, such as is obtainable on such a question as this, is that a large percentage of those tubercle bacilli are virulent for the human animal; a large percentage of them are bovine tubercle bacilli, virulent for children in the mid-period of child life; many of them are human tubercle bacilli, virulent for younger children for babies, and those in the first two years of life, producing pulmonary tuberculosis in those cases, and a small percentage are virulent for adults. There is some evidence, and I think quite conclusive evidence, that typhoid bacilli have been found in milk. Of course we have presumptive evidence, that is quite conclusive and has been so accepted by the courts, found in the development of typhoid fever amongst people who have been consuming a certain milk, in the handling of which milk at some point or other there has been probably infection with typhoid. Of course that evidence is quite conclusive to fair-minded people. It is generally accepted as conclusive when offered in courts at law. At the same time, it is nothing more than presumptive proof. They have, however, demonstrated that the typhoid bacillus has been found in milk, making use of the Widal reaction. Then there is septic sore-throat, in which I think the proof is quite definite that certain of the streptococci are responsible for the spread of the disease; but just the relation between those streptococci and the streptococci derived from the udder of the cow has not been established.

Now, that is about as much as we know about the pathogenic bacteria in milk. It is not of very much practical or administrative value, as I said a while ago, as a general proposition. After you have had the lapse of the period of incubation, the development of the disease, the number of days required of purposes of the inquiry, the condition responsible for the infection of the milk has terminated so that is not of any practical value from that standpoint at all. But the use of the bacterial standard as a method of measuring the standards, the sanitary standards, the hygienic standards, the probabilities of proper care in the production of milk on the part of those who are responsible for its production and for its handling—the advisability of using the bacterial count for these measuring and estimating purposes, I think has been fully established.

I have something here on the subject of "Laboratory Examinations for Bacteria." It is proposed to grade milk into the following three grades:

Grade A. RAW MILK. Milk of this class shall come from cows free from diseases as determined by the tuberculin tests and physical examinations by a qualified veterinarian, and shall be produced and handled by employees free from disease as determined by medical inspection by a qualified physician, under sanitary conditions such that the bacteria count shall not exceed 100,000 per cc. at the time of delivery to the customer. It is recommended that dairies from which this supply is obtained shall score at least 80 on the Unitel States Bureau of Animal Industry score-card.

PASTEURIZED MILK. Milk of this class shall come from cows free from disease as determined by physical examinations by a qualified veterinarian and shall be produced and handled under sanitary conditions such that the bacteria count at no time exceeds 200,000 per c.c. All milk of this class shall be pasteurized under official supervision, and the bacteria count shall not exceed 10,000 per c.c. at the time of delivery to the customer. It is recommended that dairies from which this supply is obtained shall score 65 on the United States Bureau of Animal Industry score-card.

Grade B. Milk of this class shall come from cows free from disease as determined by physical examinations, of which one each year shall be by a qualified veterinarian, and shall be produced and handled under sanitary conditions such that the bacteria count at no time exceeds 1,000,000 per c.c. All milk of

this class shall be pasteurized under official supervision, and the bacteria count shall not exceed 50,000 per c.c. when delivered to the consumer.

It is recommended that dairies producing grade B milk should be scored and that the health departments or the controlling departments, whatever they may be, strive to bring these scores up as rapidly as possible.

Grade C. Milk of this class shall come from cows free from disease as determined by physical examinations and shall include all milk that is produced under conditions such that the bacteria count is in excess of 1,000,000 per c.c.

All milk of this class shall be pasteurized, or heated to a higher temperature, and shall contain less than 50,000 bacteria per c.c. when delivered to the customer. It is recommended that this milk be used for cooking or manufacturing purposes only.

Whenever any large city or community finds it necessary, on account of the length of haul or other peculiar conditions, to allow the sale of grade C milk, its sale shall be surrounded by safeguards such as to insure the restriction of its use to cooking and manufacturing purposes.

Now, gentlemen, I think I will read to you one other section under the title, "Cows."

Requirements. "1. A physical examination of all cows shall be made at least once every six months by a veterinarian approved by the health authorities.

2. Every diseased cow shall be removed from the herd at once and no milk from such cows shall be offered for sale.

3. The tuberculin test shall be applied at least once a year by a veterinarian approved by the health authorities.

4. All cows which react shall be removed from the herd at once, and no milk from such cows shall be sold as raw milk.

5. No new cows shall be added to a herd until they have passed a physical examination and the tuberculin test.

6. Cows, especially the udders, shall be clean at the time of milking.

7. No milk that is obtained from a cow within fifteen days before or five days after parturition, nor any milk that has an unnatural odor or appearance, shall be sold.

8. No unwholesome food shall be used."

Milk from cows reacting the tuberculin test can be pasteurized and sold under proper supervision.

In addition to those requirements, certain recommendations are made.

Recommendations: "1. Every producer shall allow a veterinarian employed by the health authorities to examine his herd at any time under the penalty of having his supply excluded.

2. Certificates showing the results of all examinations shall be filled with the health authorities within ten days after such examinations.

3. The tuberculin tests shall be applied at least once every six months by a veterinarian approved by the health authorities, unless on the last previous test no tuberculosis was present in the herd or in the herds from which new cows were obtained, in which event the test may be postponed an additional six months.

4. Charts showing the results of all tuberculin tests shall be filed with the health authorities within ten days of the date of such test.

5. Udders shall be washed and wiped before milking."

Now, gentlemen, I think I will close, because I notice that we have come to the hour for your section meetings, with a brief discussion of the question of the welfare of the milk industry something concerning the factors that are responsible for the fact that the milk industry is not developing coordinately with the other industries. In the first place, there is not a particle of organization, as we know the word in these later years, applied to the milk business. At no stage of production or of selling is the milk business organized in the way that other businesses are organized. The men engaged in the business quite generally have resisted efforts to grade and classify milk. They have hesitated at the educational effort necessary to re-educate their people, so that they would appreciate the differences between good and bad milk, as expressed by the letters A, B, C, or other designations. They have preferred that the ordinary custom should remain of calling milk MILK, and making good milk sell in competition on the same basis with poor milk. One of the reasons why there has not been the development of the milk business that there should have been is because of the periodic outbreaks of distrust and fear that result from periodic demonstrations of the ability of milk to carry bacteria capable of causing infection. Beyond doubt the incoming of pasteurization will re-

duce the number of milk outbreaks, but, nevertheless, there will be from time to time articles in the papers, telegraphed throughout the country, emphasizing the dangers of drinking milk, and the non-discriminating public will refrain from drinking all kinds of milk until that particular fear has been allayed.

By reason of the fact that the milk business is a pretty good-sized business, we lose sight of the fact that it ought to be a very much larger sized business. We lose sight of the fact that it has not grown, and has not developed more than those other businesses. Milk is more nearly an ideal food, and finds a broader range of use than most any other food. It has many different possibilities aside from those for which it is at present employed. I have not time to develop those possibilities. I am going to put this single illustration and then leave you for your section work.

When the milk commission was en-route to Richmond, in April, they were invited to stop off at Annapolis and visit the government dairy in connection with the Naval Academy there. We found that several years ago they had a good deal of minor digestive disorder. They investigated the cause of that disorder. They found that from time to time they had outbreaks of typhoid fever. A cursory investigation was made, and after a while it occurred to them to look into the general milk supply of the community, and particularly into the milk supply that was drawn on for the academy. They found that the academy supply was quite bad. The government was finally persuaded to put in its own dairy. When they put in the dairy they found but one location available, and that was quite near the hospital. The doctors at the hospital did not want the dairy near their hospital. They said, "It will fill our hospital with flies." In reply to that the people in charge of the dairy said, "Well, if you will look after your flies, we will look after our flies, and we will promise not to disturb your hospital with the dairy flies if you will promise not to disturb our dairy with the hospital flies." They built a dairy that was very clean. In order that there might be no flies they took proper care of the manure. They not only went after the flies in the stable, but they distributed fly traps out over the pasture in order to catch those flies that in fair weather stayed out of doors. In consequence of that fact they have been very much more disturbed by hospital flies than the hospital has been disturbed by dairy flies. Immediately the milk is drawn, it is chilled. They have a chilling apparatus in close proximity to the place where the milk is drawn. Then the milk is kept cold and is consumed by the students in a relatively short while. The cows are tuberculin tested. They are examined by veterinarians from the Bureau of Animal Industry. In fact, the entire installation has been under the direction of the Bureau of Animal Industry. The milk goes over there to the boys with an exceedingly low bacterial count, clean and cold and it is consumed within a few hours.

Now the point to my story is this: There are 700 students in that academy. In olden times there were one hundred and twenty sick days per month, on an average, from minor digestive disorders. You will understand we are not talking now about babies; we are talking about husky, double-jointed, naval cadets—men whose digestive apparatus can better withstand disease than can the digestive apparatus of the average adults of the community. By sick days, we mean days excused from duty. One hundred and twenty sick days a month would mean that each student would have an average of about one-fifth of a sick day during the month. When they put in this milk the number of sick days from digestive disorders materially decreased, so that in no month since the dairy was installed have they had more than twenty sick days from minor digestive disorders, and they have had no illness that was even presumptively a milk-borne illness.

They have decreased the excuse rate to as low as one-sixth of what it formerly was, at the maximum. That is to say, the maximum rate since this new milk was used is but one-sixth of the rate before it was used. There have been months when there have been no sick days and other months with five and six and seven and eight days off duty, as compared with one hundred and twenty. Twenty was the worst month that they have had, and that happened to be a month when they had a lot of football games taking the boys off the campus.

The second point is this: Those 700 boys consume 300 gallons of milk a day. There is not a community in America that has one-quarter of that quartage. There is no community in America that has anything like that quartage, and if, there was a grade of milk on the market that was comparable with the grade of milk that is being supplied to the Naval Academy students the consumption of milk would be very much increased over the amount at present consumed. There would develop, along with greater consumption, other uses for milk that would still further increase the amount consumed, and of course that would carry with it a still greater development of the milk industry.

A Crime in Higher Education

By BURTON R. ROGERS, D. V. M., St. Joseph, Missouri
Dean of the St. Joseph Veterinary College

FEW realize it, and probably he himself does not, but Andrew Carnegie, through his Pension Fund for teachers, is one of the occult dictating factors in the educational policies of this country.

It is time to call a halt, for if one does not take up the cudgel in their behalf, thousands of worthy, ambitious, potential American young men have been, are now and will continue to be the cruel victims of what may justly be called a subtle but ignored colossal crime of education, namely, that high stone wall of "high entrance requirements." When only about 10 per cent of our boys continue their general school work beyond the grammar schools, and fewer yet complete the high school, can anyone prove that only the 10 per cent include the fit, and none of the 90 per cent are prepared to begin a complete graded course of training in the particular vocation they may choose, and that none of the 90 per cent have the potentiality to develop into the most expert individual of that vocation? Is there nothing in personality, in individuality in the school of experience to substitute for it? When connected with a State institution it was my unpleasant task to turn away many worthy, potential young men, whom I knew would make better students and better veterinarians, and in the end serve their communities better than many of the high school men whom we were forced to admit with open arms. Some of these men went elsewhere and later proved the prophecy. This is not meant to be so much an indictment against the high school as it is a plea that the non-high school man shall be given the right of a fair competitive probationary period and the opportunity to try to make good solely on his intrinsic merits, and the vocational course so chronologically graded and dependently arranged that the quality of work done shall determine whether he should be encouraged or discouraged, even if such course be lengthened.

I have often wished I had the means to address a circular letter to every young person who had planned further education, or whose parents had planned the same for them and had

sent for catalogs and other information, yet never went farther in their education. A compilation of the answers would bring us face to face with one of the real problems of the education of the whole mass of our people. There are few emotions more painful than being compelled to sacrifice an ambition and hope to make effort to improve oneself by vocational education than this arbitrary stonewall. These victims comprise an immense unorganized, scattered army of youth who are being robbed of the very benefits which the democracy of education was intended to provide for them. They are out and down, not in and up.

As I understand it, Mr. Carnegie's committee required, that before the teachers of any college can become the beneficiaries of the pension fund, that college must buy its eligibility to their accredited list, by raising their student entrance requirements to at least 15 units of high school work. This committee stands there with that club, and many a worthy, deserving, sacrificing teacher is denied its reward. It is passed on and many teachers and managers, worthy and otherwise, thus goaded on, take up the same club and strike down the noblest hope that can exist in the breast of the young. The young of the country have a right to be protected from being victims of the arbitrary dictations and discriminations of an oligarchy of so-called educators. To delegate or permit insidious usurpation of power is serious and dangerous. These men have said "This is education, and without it there is no education."

Education is one of the oldest words in the English language, it is also one of the most indefinite and ill-defined. There are others, beside intrinsic oligarchy of so-called leaders in education who should make a study of the essential educational problems of the whole mass of our people. This country needs another philanthropist, or a civic or governmental body, to provide the necessary funds for an impartial investigating committee, made up of the men and women engaged in the world's work, and not actively connected in any way with our schools and colleges to study, not only the so-called educational system of this country, but also the oligarchical dictators of its policies, and specifically define the word education, and each of the subdivisions time has made of it. Few men can give as acceptable a definition of themselves or of their product as can their impartial observers and users. Education it seems to many should be defined as training for service. In practice it too often accentuates stratification of society instead. This committee can find an ample field in probing the facts underlying the cause of close to 90 per cent of our boys ending their systematic education with the grammar school, and why four years of high school work fails to equal the expected education of proportionately increased efficiency. Criticism of our high schools is constantly cropping out in letters to the press from parents, employers and others. The indictment is not too strong that in many cases the abuses and particularly the idleness and wastefulness permitted by high school students is making bums, loafers and rowdies, even though in good clothes. Those four years often prove to be an actual liability instead of an asset for future education or work. Just last week parents in my old home town made such a complaint. A large number of our sensible thinking common people are now coming to feel that much of the old purely classical college education, and much of the present high school curricula are superfluous, and tend to create a supercilious caste, and arbitrarily and unjustly stratify society. This judgment comes from the sound conclusion that so much of the curricula is not essential to an increase in the efficiency of the life service and citizen-

ship of the individual. In spite of statements to the contrary notwithstanding social conditions and the distribution of wealth is such that all are not able to secure it. A function of government is to protect and strengthen the weaker.

The principle involved in this question of "high entrance requirements" can be illustrated by picturing two youths. One is the worthy son of an honest farmer or mechanic, the other the son of a wealthy or well-to-do man. Do the same problems confront these two young men immediately subsequent to a completion of the grammar school? No, indeed! One is asking and answering within himself the question of life—how can I increase my efficiency. If a high school is available in his community he may look over the work offered and the four years' time required, and finally conclude with sound judgment, that in justice to himself and his sacrificing parents, he cannot afford the time or the expense. Acceptance of an immediate remunerative apprenticeship would in time increase his efficiency, and in the long run may be just as an effective aid to mount the ladder of success, and become as able a citizen; and some unfortunately have no other alternative.

But the struggling young man may have ambitions to scientifically train himself for a certain chosen vocation, and he sends for college catalogs. Reading the "entrance requirements" he finds that he must be a graduate of a recognized high school, and that in order to complete the course and graduate, four more years are required, or when added to the high school work, EIGHT LONG YEARS are necessary. Eight years from today means June of 1922. It is not only *ridiculous* but it is *shameful,* that one school has gone so far as to require four additional years of common college work as an entrance requirement or 12 years hence or the year 1926. The seriousness that comes from thus pushing marriage back is a theme which as a social and moral factor any of you could diverge upon for an hour or more. Something must be done with this four and eight years wedge and close up the gap.

Our common schools have now so developed in most communities, that the most of what was in the years past taught in the old colleges is now given in the High School. The only colleges that still survive with little change, are those which prepared men and women specifically for the vocations of the law, ministry and medicine.

March 1st of this year, while connected with one of the State Institutions, as a result of the conditions set forth in an obscure manner in the catalog under the heading of "Special Students," about 25 young men who had not graduated from a high school, but who had finished the eighth grade and had attained the age of 21, were allowed to enter with and take exactly the same Freshmen work as did about five high school men. I did not let these men know which were high school men, and which were not, aiming to give them all the same square deal based upon actual merit of the work in hand. The struggle for first place was between a high school man and one non-high school, and as a result of the final examination I was compelled to give it to the non-high school man. On the other hand one of the high school men had little to keep from toward the bottom of the list. I believe much depends upon the individual. In some cases where the man has been out of touch with school work for a number of years his mind may be a little dormant and slow at first but if due allowance and time is given, he often begins to slowly forge ahead of the others. The work and the terms in anatomy, dissection, and histology, a new language, if you please, is just as new to the high school man as to the other. The high school man may be able to reel it off in gold medal fashion, but he is often less practical and less safe to trust than the other man who knows it but can't reel it off.

Let any good teacher be in close con-

tact with a group of students taking anatomy and dissection 12 hours per week from September to Christmas, the fundamental dependent subjects in medical education and he will tell you who ought to be encouraged and which discouraged.

It is better than a high school diploma or a competitive entrance examination. Many retired high school teachers of a few years ago could not pass some of the examinations they themselves once gave, let alone the examination others might now give them.

In 1908 when I was connected with one of the state schools, I made a deep exhaustive study of the problems of high entrance requirements and the efficiency of certain padded courses of study, and wrote an article upon the question, and had it printed at personal expense, but the restrictions thrown around one connected with a state institution made me realize I could not exercise the American right of free speech, without the risk of the loss of my position through efforts of those who differed with me, and I consequently never distributed them. My recent affiliation with a private school is therefore not the basis for my thought, it simply offers the opportunity of independence of thought.

ELIMINATION OF TUBERCLE BACILLI IN THE FECES OF TUBERCULOSIS BOVINES.

The feces from 96 bovines were tested for the presence of tubercle bacilli and the results show that under certain conditions tubercle bacilli may be eliminated with the feces of tubercular animals having open pulmonary tuberculosis. This is probably due to these animals swallowing some of the sputum and passing the bacilli per rectum. In animals giving only a tuberculin reaction and showing no clinical evidence of tuberculosis, tubercle bacilli were never found in the feces, therefore the conclusions of Schroeder and Cotton, and the English commission could not be confirmed.—C. Titze H. Thieringer, and E. Jahn, *Arb. K. Gandhtsant.*, 45 (1913), No. 1, pp. 1-34.

VARIATIONS IN THE AMOUNT OF TRANSFORMED ATOXYL (TRYJANOTOXYL) PRODUCED BY VARYING THE STRENGTH OF ATOXYL INCUBATED WITH BLOOD.

A 10 percent solution of atoxyl in blood incubated for one to three hours at 37°C. is more than 10 times as toxic for *Trypanosoma* brucei as a one percent solution in blood similarly incubated. To avoid misleading results due to the transforming action of red blood corpuscles upon unaltered atoxyl continuing after the dilutions are made, immediately after incubation all red blood corpuscles should be removed by centrifugalization from the fluid containing the transformed atoxyl.—B. T. Terry, *Proc. Soc. Expt. Biol. and Med.*, 1913, Vol. 10, No. 3, p. 91.

WHO KNOWS WHERE THESE VETERINARIANS ARE?

Addresses of the following members of the American Veterinary Medical Association are desired:

J. O. Connor, J. M. Courtright, J. T. Dinwoodie, C. O. Durfee, W. J. Embre, H. C. Fischer, A. V. Hall, Frank Hecker, Julian Howard, J. H. Jacobs, A. G. Johnson, E. I. Lollar, O. E. McKim, R. W. McDonald, Henry Marshall, A. H. Quin, M. C. Wiley, P. E. Wood.

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Keeping Fit

FOR three years we have reminded our readers, at this season of the year, of the dangers of typhoid fever and urged them to take the prophylactic treatment. Typhoid fever is certainly and easily preventable. No veterinarian should permit himself or members of his family to remain susceptible to this disease, which needlessly takes a toll of many thousands of lives in the United States every year. In no other instance have we ever advised self-medication for veterinarians; but the prophylactic treatment for typhoid is so simple, so devoid of harmfulness, that there is no reason why the average veterinarian may not administer it with perfect safety, and if any think that their likelihood of contracting typhoid is not great enough to warrant the expense and inconvenience of having their physician give them the treatment, they may secure the bacterin at very little cost and administer it themselves with no inconvenience.

It has been officially stated by the U. S. Public Health Service that there is two and one-half times as much typhoid fever in the United States in proportion to population as there is plague in India. There were more deaths, by eight times, from typhoid in the United States in two years than there were from cholera in Italy in the same number of years during the great cholera epidemic. In this country we have nearly four times as many deaths from typhoid among a given number of American citizens as among the peoples of crowded Europe. Every year 20 people out of every 100,000 of our population die of typhoid.

A pure water supply would annihilate typhoid almost instantly. If all our cities were to have a pure water supply it would result in a typhoid mortality of fewer than 10 deaths per 100,000 population per annum. This would mean a saving of 15,000 lives from typhoid alone, or 150,000 cases.

The cost of pure water in any community ought not be prohibitive, as the most expensive system of water purification costs less per capita than the average citizen pays for ice or telephone. Some of our cities are getting pure water from long distances at great cost. For example, Los Angeles has gone 250 miles to the east for her water supply, and New York City is to get hers from

the Catskills, 100 miles to the north.

The water in villages and on farms is notoriously worse as regards typhoid contamination than the water of cities. Many practicing veterinarians must in the course of their work use water of doubtful purity. The remedy is prophylactic injections of typhoid bacterin.

In the United States Army typhoid prophylaxis is no longer an experiment, it is a routine measure. The objections to the use of the bacterin are almost nil; the immunity to typhoid lasts three years or longer.

Below we publish clippings from a recent issue of *The American Journal of Clinical Medicine* showing some results obtained from typhoid prophylaxis:

PROPHYLACTIC TYPHOID VACCINATION IN THE FRENCH ARMY.

The record of another interesting demonstration of the prophylactic value of antityphoid vaccination appears in the *Province Medicale* (Mar. 14, p. 115), which gives a sketch of the experience of Major Lajoanio, of the seventh batallion of chasseurs of the French army. Lajoanio was in charge of the ninth Alpine military group, consisting of a batallion of chasseurs and two batteries of mounted artillery, who were sent to Morocco, in 1912, to take part in that campaign. Immediately upon receipt of orders, vaccination of these men against typhoid fever was begun at the Val-de-Grâce military hospital, the work being completed during various stages of the journey to their post in El Boroudh.

In all, 1,260 men were vaccinated. In spite of the fact that this operation was completed in a hostile country, when the men were fatigued and many of them were attacked, soon after their arrival, by malaria and dysentery, no serious results followed. Not a man was sent to the hospital or compelled to resort to the ambulance service; only 20 of the men were temporarily excused from service.

The soldiers were at once thrown under hard active-service conditions, compelled to take long marches day and night during the three months' campaign, much of the time in camps where the soil and drinking-water were known to be infected with the germs of typhoid fever of a virulent type. The country was infested with flies, and in every respect exceedingly unhealthy.

To give an idea of the conditions, the writer states that in 1912, among the unvaccinated soldiers, there occurred 169 cases of typhoid fever in every thousand. In spite of the unfavorable conditions surrounding the 1,260 men in this batallion, after four months' service in Morocco there occurred only two cases of typhoid fever, and these two men had not been vaccinated because they had previously suffered from the disease. Not one of the vaccinated men was attacked.

As illustrating the protective power of this method of treatment, the writes cites the case of an artillery officer who had received the treatment. Shortly after reaching Morocco, his wife, the grandmother, and three children joined him in Casablanca. Of these, only the mother had been immunized. The grandmother had not been vaccinated, and she, shortly after, contracted typhoid fever. One of the children also took the disease and died. The other two were vaccinated immediately, and escaped.

ANTITYPHOID VACCINATION IN FRANCE.

At the February 10 meeting of the Academy of Medicine (*Gaz. des Hop.*, Feb. 12, 1914, p. 282), Vidal reported some results with antityphoid vaccination in a garrison which in 1912 suffered from a terrible epidemic, in which 225 in 1,000 non-vaccinated people suffered from the disease and 32 succumbed. He vaccinated, without any special incident resulting, the older soldiers who were not yet immunized and the young soldiers but recently enlisted. His confrères at Avignon had followed the same practice. All told, 2,420 men were vaccinated, these representing 9,000 inoculations.

The local reaction amounted to practically nothing; only two men in the 58th infantry complained seriously, and no person was sick enough to require admission to the infirmary or hospital as a result of the inoculations.

The prophylactic results have been as follows: There was not, in 1913, a single case of typhoid fever among the troops in the garrison. Such a result has never occurred before. From 1892 to 1912, inclusive, there had been 1,263 cases of typhoid fever and 118 deaths from this cause at this garrison. The number of days of treatment have been, all told, 44,133. In 1913, all these figures have been reduced to zero. Besides these, 400 non-enlisted persons who received the vaccine treatment also have enjoyed complete immunity.

BOOK REVIEWS

The Hypodermic Syringe, by George L. Servoss, M. D. This is a unique work in that it is the only one upon an important division of the science of medicine.

It is written by a doctor of human medicine, for doctors of human medicine and, while admirably adapted to its field, it is somewhat primary for veterinarians, who are, as a rule, better versed in hypodermic medication and far more experienced therein than are practitioners of human medicine.

"The Hypodermic Syringe" is right up to date. Probably more than half of its discussion being given over to biologic products, the wide use of which and in most cases the discovery of which is due to and directly dependent upon the hypodermic syringe.

The author names sixty-three medicinal agents that are properly administered by the hypodermic route and then in turn discusses each, much as one would find it an up-to-date treatise on therapeutics.

The veterinarian will find the chapter on "Anesthesia," dealing with both general and local anesthesia, the most interesting one in the book, with the one on "Shock" a close second in the matter of importance and value in comparative medicine.

The book is plainly printed on good paper, serviceably bound and offered at a very reasonable price; 317 pages, cloth bound. May be secured from our book department. Price, $2.00.

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Manual of the Practice of Veterinary Medicine, for Practitioners and Students, by Edward Courtenay, M. R. C. V. S. Third Edition revised by Frederick T. G. Hobday, F. R. C. V. S., F. R. S. E.

Courtenay's "Veterinary Medicine" has been so long before the profession that every veterinarian has heard of it and probably most of them have read one of the earlier editions.

The present edition is a very material improvement upon its predecessor. With Mr. Hobday as its sponsor it is sure to find favor among American veterinarians, to a large number of whom he is favorably known.

Certainly in no other work is there as much genuine, authoritative, scientific information given on as large a number of subjects in the same number of pages. There are a number of small volumes that cover the whole subject of theory and practice in a manner acceptable for stockmen, but this is for the practitioner. It is a work he can turn to and look up almost any subject and get the gist of what is known concerning it, and return the book to his library shelves all in the space of five minutes. Necessarily, much is omitted in a treatise so short, but this is the work's strongest recommendation. In Hutyra and Marek's "Pathology and Therapeutics of the Diseases of Domestic Animals," Law's "Veterinary Medicine," and Hoare's "System of Veterinary Medicine" we have a sufficiency of complete works for some years to come, and did Courtenay's "Veterinary Medicine" attempt to enter the same field it would be less welcome.

It goes without saying that faults may be found in all works, and this one is no exception. Probably it were not just fair to the reader, to pass over without mentioning, certain matters in "Courtenay" which are not according to approved practice in this country. One of the most conspicuous of these is the treatment given for pneumonia. The author recommends stimulants first, last and all the time, a treatment almost wholly discarded in this country for the use of sedatives at the onset of the disease and during its progress, as long as the metabolism is above par, reserving the stimulants until they are actually needed. This statement is used: "But in these few and exceptional cases [of pneumonia] where a sedative is required, tincture of aconite may be administered occasionally until the desired effect is

produced." The best practice in this country requires the use of aconite frequently and continuously in all but the very exceptional cases where the veterinarian sees the disease only in its later stages.

Throughout the whole discussion of respiratory diseases, pleurodynia, bronchitis, pharyngitis, etc., the same line of treatment is advised. The author appearing not to recognize that the practitioner can accomplish as much in fourteen hours with veratrin, aconite and bryonia as he can in as many days with stimulants, where the treatment is commenced in the early stages of the disease.

The following paragraph on the discussion of purpura hemorrhagica is of interest: "During the past few years, observations by Professor Dieckerhoff have shown that Iodine is almost a specific for purpura. It may be given as Liq. Iodi in full doses, or, better still, intratracheally. Dieckerhoff's solution consists of Iodi Resub. 1 part, Potass. Iodi 5 parts, Aq. 100 parts. Of this from 3ll. to ℥l. is injected into the trachea very slowly once, twice, or even three times a day. The results are excellent, and no further treatment is as a rule required."

In some places it appears that due credit has not been given American veterinarians, investigators and pathologists for the fine work which they have accomplished. A case in point being a discussion of cerebro-spinal meningitis, under which the author describes that type of forage poisoning, believed to be due to molds, which resulted in the loss of twenty thousand horses in Kansas and Nebraska during 1912. No mention is made of the work that was done on this disease by Mohler, Busman, Kinsley, Udall or Haslam.

Under the discussion of rabies, it is stated that cases have developed more than six months after inoculation. No mention is made of the discovery of the organism producing this disease, and it is stated that the invariable termination is death. In this country, many veterinarians believe that mild attacks of rabies, from which the animals recover, occur.

The horse trocar is recommended for bloat in the ox, whereas the trend in this country is to larger trocars than those manufactured. Some having found that a trachea tube inserted into the rumen will relieve tympanites where even the largest cattle trocar would fail.

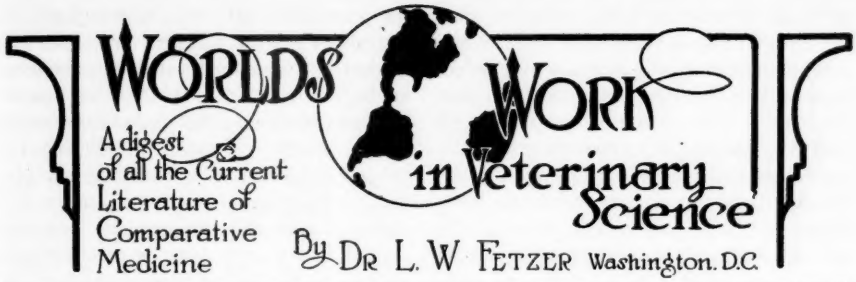
Very noticeable is the entire omission of all reference to bacterin therapy. This subject was probably left out of the discussion in the interest of brevity and for the further reason that it is quite thoroughly covered in a contemporary publication from the same press.

Cloth bound, 459 pages, published [in America] by the Chicago Medical Book Company, Chicago; price, $2.75.

Supplementary Official Tour of Europe of the American Veterinary Medical Association to Attend the International Veterinary Congress, London, August 3 to 8, 1914

Many who have been able to arrange to sail on June 13th with the first party, have expressed a desire to see something of Europe in connection with the attendance upon the Congress at London. The following tour has therefore been arranged:

July 10th—Sail by S. S. "St. Paul" of the American line, $55 berth.
July 17th—Paris.
July 18th—Paris.
July 19th—Paris.
July 20th—Paris.
July 21st—Paris.
July 22nd—Paris.
July 23rd—Paris.
July 24th—Paris.
July 25th—Brussels.
July 26th—Antwerp.
July 27th—Utrecht.


WORLDS WORK
in Veterinary Science
A digest of all the Current Literature of Comparative Medicine
By Dr L. W Fetzer Washington. D.C.

EXPERIMENTAL pulmonary tuberculosis in the dog. The effect of large amounts of tubercle bacilli of bovine type introduced directly in the lungs by way of the air passages.—P. A. LEWIS and C. M. MONTGOMERY. Jour. of Experimental Med. 1913, Vol. 17, p. 527.—By intratracheal introduction of the bovine tubercle bacillus a progressive fatal tuberculosis was produced. One of the lobes was affected and the condition resembled the one which is often observed in man.

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SALVARSAN against experimental rabies, F. M. MARRAS, Centrallbl. f. Bakt. 1st. Abt. Orig. 1913, Vol. 70, No. 3-4, pp. 190-192.—Salvarsan had no immunizing powers, irrespective of whether it was administered after 18 or 12 hours (into guinea pigs) or directly after (rats or mice) infection with fixed or street virus.

Intravenous injections given to dogs or rabbits infected with street or fixed virus at the beginning of paralysis does not affect the course of the disease in these animals.

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TUBERCLE BACILLI in the semen of tuberculous subjects. DOLD and ROTHACKER. Zentralbl. f. Bakt. etc. I Abt. Orig. 1913, Vol. 69, pp. 379-391.—The contents of the seminal vesicles of man was diluted with salt solution and injected into guinea pigs. In the semen of 24 tuberculous cadavers tubercle bacilli were noted 16 times with the animal test, and only 3 times with the smear staining method. In all of the 16 positive cases the disease had well progressed and death was directly due to pulmonary tuberculosis. In less severe cases the organisms were not detected in the seminal vesicles.

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PARALYSIS in a dog simulating poliomyelitis, S. FLEXNER and P. CLARK. Journ. of Exptl. Medicine, 1913, Vol. 17, No. 5, p. 517.—A case in which the symptoms present very much resembled those occurring in man. The necropsy also showed changes in the spinal cord and invertebral ganglions which were similar to the ones observed in human beings. Inoculation of diseased spinal cord into young dogs and *Macacus Rhesus* did not produce paralysis nor other symptoms.

—

A NOTE on some experiments performed with a view to finding out the period before symptoms during which the saliva of an animal incubating rabies is infective. J. A. CRUICKSCHANK and R. E. WRIGHT. Indian Journ. Med. Research 1914, Vol. 1, No. 3, pp. 532-535.—Rabbits, guinea pigs could only be infected with difficulty subdurally or intravenous with the saliva of dogs or guinea pigs in the presymptomatic stage of rabies. In one case the saliva from a dog was infective three days before the appearance of symptoms in the animal. When the symptoms of rabies are present it is difficult to demonstrate that the

saliva is infective and this suggests that the bites of rabid dogs even under optimum conditions will not always infect those bitten because the saliva is not virulent. The suspensions made of salivary glands are considered much more infective under experimental conditions than the saliva obtained from them. This is particularly true of the sub-maxillary gland. Negri bodies were not always detected in the brains of rabid animals.

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THE BIOLOGICAL properties of milk, both of the human species and of cows, considered in special relation to the feeding of infants, JANET E. LANE-CLAYPON, Rpts. Local Govt. Bd. [Gt. Brit.], Pub. Health and Med. Subjs., n. Ser., 1913, No. 76, pp. 95.—Most of the ferments present in milk are derived from bacteria which are found in milk. The author "considers that there is no evidence to show that milk free from bacteria contains any ferments capable of assisting in the digestion of food by any of the processes of digestion at present known to us. The only ferments present in bacteria-free milk are those which are known to be present in large quantities in the blood, and ferments (whose presence is not firmly established) which act upon substances not known to occur in the processes of digestion. Raising milk to 100° C. does not destroy or apparently injure any of the chemical substances necessary for the health of the child."

A bibliography of the subject, containing 298 references, is appended to the report.

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THE INFLUENCE of salvarsan and neosalvarsan on the circulation and on the kidneys of healthy and diseased animals. ALWENS. Arch. Expt. Path. Pharm., Vol. 72, 1913, pp. 177-223.—Intravenous injections of salvarsan cause nephritis. Its toxicity increases not only with the dose given, but with the concentration; the histological appearances of the kidneys are described in detail; the nephritis is a vascular one, analogous to that produced by arsenic and cantharides. An immediate result of the injection, if made rapidly, is a fall in blood pressure. Neosalvarsan produces clinically no nephritis, and in animals the nephritis produced by long continued use of the drug is less marked; so also is the fall in blood pressure. In animals which already have nephritis from other causes, the condition is intensified by very small doses of salvarsan, and in cases where the heart is diseased, the action of salvarsan on the circulation is most unfavorable.

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POISONING by oleander leaves. District Vet. Leicht. Münch. Tierarztl. Wochenschr. 1914, Vol. 65, No. 14, pp. 319-320.—A case in an eight year old draft horse who ate the leaves of an oleander bush used for decorative purposes before a public drinking place. The animal showed a loss in appetite, mental depression, marked diarrhoea and frequent and deep respiration. The pulse was irregular and 60 per minute, and the rectal temperature 39° C. On the third day the animal became worse and had an almost imperceptible pulse, the front extremities trembled considerably and frequent discharges of feces and urine took place. The rectal temperature rose to 40.3° C., the respiration became frequent, peristalsis was increased, and the mucous membranes of the head were much reddened. The animal died.

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CYANOGENESIS under digestive conditions. S. J. M. AULD, Jour. Agr. Sci. Cambridge, 5 (1913), No. 4, pp. 409-417.—Under digestive conditions cyanogenesis is likely to be inhibited by acids and alkalis, digestive juices, cellulose, glucose and molasses, salt and many other feeding-stuff constituents and adjuncts.

Owing to the time the food remains

in the digestive tract before coming to the true stomach or the acid secreting portion of the stomach, normal inhibition is caused by the alkaline character of the salivary juices. This is likely to be the chief cause of the innocuous character of linseed cake.

In the case of sheep fed with linseed cake shortly before being killed, small amounts of hydrocyanic acid were to be found, chiefly in the rumen. Cyanogenetic feeding stuffs are most likely to be poisonous when fed with acid containing or acid producing food stuffs, or where the hydrocyanic acid is preformed, as in the case of an improperly made linseed gruel.

The small quantities of hydrocyanic acid normally produced from cyanogenetic feeding stuffs may possibly have a strongly beneficial action.

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THE INFLUENCE of the intestinal poisons (p-cresol and indole) on the central nervous system of animals. S. WLADYCZKO. Ann. Inst. Pasteur, 1913, Vol. 27, pp. 336-340.—Continued ingestion of small quantities of p-cresol and indole, which are formed by the action of putrefactive bacteria on protein degradation products in the intestine, have no visible action on the general health of the animal, as compared with control animals, as a result of the regressive changes in the blood vessels of the brain. These alterations, which are produced by the substances, are less marked in the case of guinea pigs than of rabbits. They have also been observed in an experiment on *Macacus cynomolgus*. Small doses of p-cresol and indole also produce, after repeated ingestion, a slight destructive change in the cellular elements of the central nervous system.

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THE BACTERIOLOGY and vaccine therapy of distemper in horses. W. LINTZ, Jour. Expl. Medicine, 1913, Vol. 17, No. 5, pp. 511-516.—Thirty-one cases of influenza or shipping fever occurred in the stables of Squadron C of the National Guard of the State of New York, and of these thirteen were fatal. Thinking that the mouse might be an important factor in the spread of the disease, autopsies were made of a number of these rodents found dead in the stable. Cultures from the blood of mice revealed a Gram-positive spore-bearing, actively motile, nonenscapsulated bacillus which did not appear in chains but singly and in pairs. The organism was not fatal to other mice, rats, guinea pigs, and rabbits. The anthrax bacillus was ruled out. Bacteriological examination of the intracardiac blood, lungs, liver, spleen, kidneys, and cerebrospinal fluid of a horse revealed upon smears a gram-negative and a gram-positive encapsulated lancet shaped diplococci. Sown on plates one of the colonies present in smallest amount, was found to be composed of typical pneumococci. The other organism was far more numerous.

Morphologically the latter proved to be composed of plump bacilli, varying in length, with rounded ends when singly distributed, as was usually the case. A few diploform and short chains presented square ends. Its average measurements are from 0.5 to 1.5 microns in width and from 0.6 to 6 microns in length, it is extremely motile, has no spores, no metachromatic granules, and no capsule; it is Gram-negative and stains readily with the aniline dyes. Upon successive subcultivations, however, the colonies lost their mucoid appearance and became smaller in size. This organism was inoculated into a horse and the cardinal symptoms of the disease, namely, by hyperpyrexia, slow pulse, anorexia weakness and constipation were reproduced in the animal.

A vaccine composed of 800,000,000 of each species of bacteria, the pneumococcus and the bacillus isolated, was injected subcutaneously in the region of the neck of three sick horses. The ani-

(*Continued on page* 439)

Materia Medica and Therapeutics

By DR. CHARLES F. LYNCH, Terre Haute, Ind.

Bryonia vs. Morphine in Relief of Pain

IT HAS become a custom with many practitioners of both veterinary and human medicine to rely almost exclusively upon the hypodermic injection of morphine for the relief of those conditions that are characterized by severe pain, be the cause of that pain what it may. This growing tendency to the use of morphine is a glowing tribute to the lack of therapeutic instruction which now prevails in a large percentage of American medical and to a certain extent also in American veterinary colleges. Since the introduction of surgery as a science during the past century, the best efforts of both professions has been toward development of surgical skill to the neglect of therapeutic efficiency.

If the best interests of the patient were really at heart in this advancement of surgery, it would be commendable, I fear, however, in many cases the incentive has been largely the larger fees that the more spectacular surgical operation commands; rather than an altruistic motive of developing the line of treatment most beneficial to the patient. I do not mean in any way to belittle surgery. It is a great science, and is seen in its highest development in America today; but it has been and is being overdone. Surgical skill has been developed to the absolute neglect of therapeutic skill, and it is from this neglect that we find such a large number of men who know of no better means of handling acute inflammatory pain than a hypodermic injection of morphine.

Morphine Permits Matters to Become Worse

If these same practitioners but knew even remotely the action of morphine they would see the futility of such practice. Morphine is an agent which simply deadens the perception of pain and in no way relieves the underlying pathological condition, which is at the seat of the trouble. The use of morphine in the treatment of inflammatory pain is just about as sensible as the practice of the ostrich which buries its head in the sand when an enemy approaches. With morphine we simply cover up the condition for a few hours and give it a chance to become more widespread, more deeply seated, and often beyond power of medical or surgical skill to relieve.

In contrast to the opiates we have in our therapeutic armentarium a remedy which acts in a much different manner, not only relieving the pain, but also the underlying conditions which accompany the acute inflammations. Let us take, for instance, an acute pleurisy with severe thoracic pain. Here we have a condition in which there is severe congestion of the serous membrane lining the thoracic cavity. The inflamed surfaces of the visceral and the parietal pleura are rubbing upon each other and at each inspiration and expiration produce severe pain. What is the effect in this condition

when we inject morphine? Merely a deadening of the sensory perception. The pathological condition remains the same and hourly becomes more pronounced. Soon the engorged vessels begin to pour out serum and red blood cells into the pleural sac and we have developed a pleurisy with effusion.

This collection of fluid separates the inflamed surfaces and the pain is relieved for a time. By the time the effects of the morphine have worn off this effusion has taken place and relief from pain is more or less permanent. The noble practitioner strikes an impressive pose and says, "See what I have done. A wonderful man am I." But is he such a wonder as he would fain imagine? Has he done a wonderful thing? Most certainly not. He has simply allowed a simple inflammation develop into a much more serious condition, and one from which it will require weeks, and even perhaps months to entirely recover.

Remove Both the Cause and Effect

How much more satisfactory would it have been if he had made use of an agent which would not only have relieved the pain, but would also at the same time have restored the normal circulatory balance in the inflamed serous membrane and have cleared up the condition without the formation of this effusion into the pleural sac? You may ask is there any such remedy as this? The question would not be surprising, as it is very common to meet with practitioners of either human or veterinary medicine that do not know that a pleurisy properly handled can be so aborted or at least very much limited. Yes, we have such a remedy, and this wonderful agent is none other than Bryonia alba, an European plant, the root of which has been used by knowing practitioners for nearly a century as the basis for manufacture of a remedy which does carry the wonderful possibilities for therapeutic success above outlined.

Bryonia is not official in the United States Pharmacopœia, but this fact does not militate in the least against the success of those practitioners who make use of the remedy or its principal glucoside bryonin. Most pharmaceutical houses list a tincture of this drug. I have used this preparation with a moderate degree of success, but have found more uniform results following the use of the Specific Medicine, put up by Lloyd Bros., of Cincinnati, Ohio, or the glucoside bryonin which can be obtained from any of the leading "active-principle" firms. The one which I have most extensively employed is that put out by the Abbott Alkaloidal Company, of Chicago.

Physiological Action of Bryonia

Given in large doses, the action of bryonia is that of a hydrogogue cathartic. It is probably in part due to this action that the agent assists so materially in the elimination of toxic products from the body and limits or prevents their harmful effects upon the various body tissues. Bryonia is an agent which seems to exert a special infleunce upon inflamed serous or synovial membranes. In acute inflammatory diseases of the pleura, the peritoneum, the meninges of the brain or cord, or upon the acute articular infections, the remedy is a tower of strength when intelligently handled. Especially in inflammation attacking the lining membrane of the thoracic cavity is this agent a most useful addition to treatment. In fact, in the management of acute pleurisy there is no drug that can compare with bryonia as a positive remedy.

In these acute inflammations of serous structures bryonia does not act by deadening the sensation of the nervous system and allowing the pathological condition to proceed unchecked until the disease has done all the damage possible. It acts in an entirely different manner. This agent strikes at the root of the evil and corrects the circulatory balance in the injected membrane. The progress of the pathological changes is effectually checked, and the throwing out of an in-

flammatory exudate is entirely checked or effectually limited. If continued in proper dosage, it promptly promotes the absorption of whatever exudate has already been thrown out and hastens the return of the diseased structures to normal condition.

Bryonia in these cases also opposes the breaking down of tissues and the formation of pus. It is a remedy then that has a tendency to prevent the development of chronic effusion and even pus in the pleural sacs, both of which are common complications as the result of the handling of inflammations of the pleura by means of morphine injections. In this direction the effects of the drug are materially assisted by the combination with aconite, asclepias and belladonna, all of which are decidedly antagonistic to the progress of inflammation.

The cardinal indication for the use of bryonia is pain, and especially pain of serous or synovial surfaces. If this pain is made more noticeable because of movement, the indication for use of bryonia is the more clear cut. Accordingly in pleurisy, where the animal is suffering from severe pain, which is made worse by any movement of the body, and even by the movements which accompany a normal inspiratory and expiratory effort, the use of this agent is very distinctly called for.

Therapeutic Use

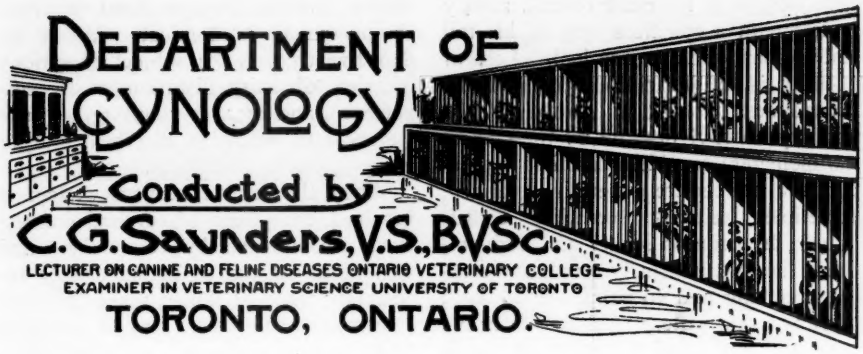
Bryonia is a remedy which will be found especially valuable in the treatment of diseases of the chest. Not only does this apply to the pleura, but to inflammations of the thoracic viscera as well. In acute pleurisy, as just pointed out, the indications are especially clear. Uncomplicated cases will usually yield favorably to the use of this agent alone. The favorable outcome can be hastened by alternation with or combination with aconite and pleurisy root (*Asclepias tuberosa*). If the case has been improperly handled at the beginning and an effusion is present this agent should be given for the purpose of promoting absorption of the abnormal collection of fluid in the pleural sac.

In acute bronchitis, with short, sharp, painful cough, accompanied by a scanty or blood-stained sputum, and much distress over the chest region this agent is strongly advisable. It should here be given in small doses frequently repeated. Not only will the pain be relieved, but the cough and fever will be more effectually subdued than by any other single remedy or combination of remedies. Here again it acts well with aconite and belladonna. Its use in the handling of pneumonia has already been referred to in connection with aconite. (See March JOURNAL.)

The value of this drug is by no means limited to inflammations in the chest, although its results in these cases is such as to almost warrant placing it at the head of all remedies as a specific in the handling of these diseases. Peritonitis, or inflammation of the lining membrane of the abdominal cavity, is also most effectually handled by the proper and prompt exhibition of small doses of bryonia at frequent intervals. With this agent combined with the usual auxiliary measures pain can be controlled, the inflammatory phenomena checked and the condition successfully managed without the exhibition of opium. Here, as in other cases of acute inflammation, the action of the drug is facilitated and enhanced by exhibition in combination with a reliable preparation of aconite, or with the alkaloid aconitine. Bryonia, however, is an agent which may be beneficially continued even after the stage of acute onset in the inflammations; that is, after aconite is no longer indicated.

In the acute inflammations of the lining and covering membranes of the heart, and even in acute myocarditis, this agent is one which possesses most marked potential power for therapeutic efficiency. In a pericarditis with effusion, or in a rheumatic endocarditis or pericarditis, bryonia is an agent of great trustworthiness.

(*Continued on page* 440)


DEPARTMENT OF
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Distemper

THIS is the most widespread, the most common, the most fatal, and with the exception of rabies, the most dreaded malady of dogs. When first discovered in France, from which country is was imported into Great Britain, it was and is still named distemper, yet that name seems unhappily chosen, as being too indefinite for correct application to a disease marked by such varying phases. Distemper is also known as "Dog ill," (some parts of England); the Scotch term it "the Snifters" and this term, although unscientific, certainly graphically conveys to the mind one important characteristic of the disease, namely, the snifting noise, half-cough, half sneeze—made by the dog in his efforts to get rid of the exudate which accumulates in the upper air passages; but "snifting" is a term too limited to adequately describe a disease which has well been called the "scourge" of the kennel and which assumes so many forms and complications.

Etiology: Up to quite recently the causative agent of this disease was simply a matter of speculation, many theories being advanced as to the *etiological* factor. The microorganism now definitely determined as the sole cause of distemper is the Bacillus bronchisepticus discovered and isolated in pure culture by Dr. N. S. Ferry. Although responsible for the primary symptoms of the disease the B. bronchisepticus is by no means responsible for the complications which generally ensue during the course of the malady. There are always closely associated with it, the various strains of staphylococci and streptococci and it is the effect of their combined toxins that gives us the clinical picture which an animal presents when suffering from distemper. Among the predisposing causes of distemper may be mentioned youth, unhygienic surroundings, in breeding, in fact any circumstance which tends to lower the animal's vitality and its powers of resistance to disease or unfavorable conditions.

Symptoms: The symptoms of distemper vary considerably according to the particular local complications which are developed; they are also dependent upon the severity of the attack, the powers of resistance of the patient, the rapidity with which the disease progresses and the treatment the patient receives. As a rule, the first observable symptoms are pronounced lassitude and dullness, a great disinclination to play or exercise, a decided preference for warmth, the dog creeping into the warmest corner, or crouching before the fire, and a general languor that appears to benumb the dog's energies; so that the hitherto lively dog, instead of jumping

with delight at his master's call, merely replies with a spiritless wag of his tail and a dismal woe-begone look. Loss of appetite is an invariable symptom and feverishness ensues, as shown by the hot, dry nose, rigors and by the clinical thermometer; considerable thirst is present; the bowels are generally deranged, sometimes relaxed, sometime constipated; the urine is scanty and high-colored; the coat is usually rough and staring; retching and vomiting often occur; there is a thin watery discharge from the nose and eyes, and a hyperemic condition of the conjunctivae; the eyes appear unusually sensitive to light.

A short, dry, husky cough and sneezing occur, especially when the animal is brought into the open air. The discharge from the eyes and nose gradually becomes more purulent, sticking the nostrils and eyelids together, causing the patient much discomfort and inconvenience and interfering with respiration, and resulting in constant efforts to clear the nostrils which produce that peculiar noise that has earned for the disease the popular name above mentioned. In many cases the eyes are seriously affected.

A small bluish-white opacity may be observed, which gradually widens and deepens until an ulcer is formed which by perforating the anterior layers of the cornea may cause the condition known as staphyloma or may even allow the aqueous humor of the eye to escape. Such cases, although of alarming appearance, usually do well under appropriate treatment, although in some cases of extreme severity some slight opacity of the cornea may remain. As the progress of the disease advances, special symptoms present themselves, depending upon what organ or organs are chiefly involved. However, a constant and unvarying symptom in all cases of distemper, irrespective of local complications is rapid emaciation and loss of strength.

In cases where the respiratory tract is chiefly involved the symptoms of broncho-pneumonia predominate. When the digestive tract is the subject of serious invasion, digestive disturbances are emphasized, and there is vomiting, profuse watery and offensive diarrhea, and in many instances an icterus.

When the central nervous system is involved, symptoms of cerebral congestion, accompanied by convulsions and sometimes attacks of mania closely resembling those of rabies, make their appearance, or the patient may become partially or even completely paralyzed or it may develop the persistent clonic convulsion of some group or groups of muscles, known as chorea.

The skin in distemper, especially that on inside of the thighs, on the chest and on the belly, is often the seat of a pustular eruption (the exanthema of distemper). These pustules discharge their contents, dry up and form scabs, which later on fall off leaving small depigmented areas.

The significance of the appearance of this exanthema is still a debated question amongst practitioners, some contending that it foreshadows a fatal termination, others that its appearance is a favorable symptom. The author's experience is that it is merely a manifestation of the disease and has no significance either one way or the other.

Another prominent symptom in distemper is the characteristic and exceedingly offensive odor emanating from the patient's exhalations and from the skin, the latter also having a peculiar greasy feel to the touch which can hardly be mistaken when once experienced.

Treatment: The therapeutic indications for distemper vary with the particular complications that the case presents. In other words symptoms must be treated as they arise, but the whole *rationale* of treatment may be summed up by saying that the patient's powers of resistance must be raised to resist the invading organisms, and free elimination must be established to carry off, both the

microbic toxins, and those toxins produced by the normal flora of the intestinal canal, which in disease are absorbed into the system because of imperfect elimination and perverted metabolism. Thus we have to deal with not only the toxemia produced by the primary invading organism, but also with the condition known as autointoxication or autotoxemia.

Elimination may be secured by medicines causing free evacuations of the bowels and by those stimulating the free excretion of urine. To obtain the former, a dose of calomel should be given, preferably in repeated small doses to effect, the latter may be attained by appropriate doses of such diuretic medicines as spirits of nitrous ether, potassium nitrate, potassium acetate or potassium citrate.

In addition to this cleaning out process the flora of the alimentary tract must be kept under control by the use of intestinal antiseptics, such as calcium creosote, the sulphocarbolates of zinc, calcium and sodium advantageously combined with a bismuth salt, acetozone (15 grains to the quart of water and given *ad lib* in the drinking water), creosote or salol in enteric coated pills or capsules.

To raise the patient's powers of resistance a bacterin composed of Bacillus bronchisepticus combined with staphylococcus, aureus and albus must be administered hypodermically every three days in ascending doses. The action of the bacterin treatment is much increased, especially if the patient has not come under observation till the disease is well advanced, if a simultaneous hypodermic injection of nuclein is administered. The respiratory complications must be treated as they arise, under the directions given previously, for handling respiratory diseases.

A useful combination for general routine of cases is as follows:

℞—Glyco-Heroin .....℥ iiss
Nuclein solution .....℥ iiss
Potassium citrate .....ʒii
Aqua ad.....℥ X
M. Sig.—Give four drams twice daily.

Gastrointestinal complications are treated with the usual agents for the control of vomiting, diarrhea and intestinal fermentation.

The nervous symptoms should be controlled by ice packs to the head, if cerebral congestion occurs, followed by the internal administration of bromides; preferably strontium bromide in 5- to 20-grain doses, since this salt is less liable to create gastric disturbance than is potassium bromide. Chorea is best treated by the prolonged administration of Donovan's Solution; paralysis is most successfully combatted by Strychnine and electrical massage. The exanthema requires only the application of an antiseptic wash such as Chinosol 1-1000.

The eyes require treatment *from the onset of the disease,* all discharge must be wiped away with cotton-wool swabs soaked in a warm solution of boracic acid and a few drops of a five per cent solution of Protargol dropped into the conjunctival sack. When ulcerations occur a 10 per cent solution of Protargol should be used, or the ulcers should be touched lightly with a stick of silver nitrate. Any opacity left may generally be removed by the daily application of a one per cent yellow oxide of mercury ointment.

Nursing and Diet: Good nursing and an appropriate diet form one of the most essential features of the successful treatment of distemper. Without them the most scientific and rational treatment is seriously handicapped, if not entirely useless.

It must be remembered that even with the bacterin treatment, distemper will run its course either to a favorable or fatal termination, and that therefore no effort must be spared to sustain the patient's vitality during the progress of the disease.

Good nursing consists in seeing that

the patient is kept in sanitary surroundings; that he has before him at all times a plentiful supply of clean cold water; that his eyes and nose are kept clear of discharge and that his teeth and mouth are cleaned at least once daily with some antiseptic wash. This latter point, although generally overlooked, has a most important bearing on the amount of nourishment the patient can be coaxed to take. A dirty furred up mouth and unclean teeth are the cause, in a great many instances, of the animal's refusal of all nourishment. It is also the nurse's duty to administer the prescribed medicines and diet, as directed by the attending veterinarian.

The diet for a dog suffering from distemper must be appetizing, easily digested and easily assimilated. The patient should be *fed four or five times a day small quantities at a time.* In the case of a severe attack with great prostration and weakness it is necessary to compel the patient to take nourishment by drenching him with beef tea, raw eggs, milk, etc. Any of these liquid foods may in these cases be advantageously combined with stimulants such as small quantities of whiskey, brandy, or port wine.

The diet should consist of raw meat minced fine, or if the patient prefers it cooked meat, milk, eggs and beef tea. Great care must be taken not to upset the patient's digestive system and no indigestible articles of diet should be allowed.

When convalescence sets in, as shown by the improved appetite, subsidence of symptoms and raised spirits, a good tonic must be administered (triple arsenates).

Owing to the extreme contagiousness of the disease great care must be exercised to prevent its spreading. The patient should be isolated, all articles coming in contact with him, such as dishes, water troughs, etc., should be sterilized by boiling immediately after use. All brushes, bedding, sponges, swabs, etc., burned and upon recovery the premises thoroughly disinfected. The attendant should sterilize thermometers, pill guns and medicine spoons before using them again; he should wear a gown while handling the patient and should disinfect his hands and boots before preceding to the next case. It is advisable to immunize all dogs exposed to the infection with a prophylactic dose of distemper bacterin.

Rabies

RABIES is a true infective disease and is transmitted solely by inoculation, generally by the bite of an affected animal. Noguchi, of the Rockefeller Institute, has recently isolated and cultivated the cause, which appears to be a protozoan, present in the tissues of the central nervous system, saliva and urine. The virus is fixed and endogenous, that is to say, the animal body is absolutely necessary for its natural development. The period of incubation varies from three to six weeks or longer, with an average of twenty-five days.

Symptoms: The clinical appearance of rabies occurs in two forms, namely, furious rabies and dumb rabies. The two are only different forms of one and the same disease and are not two different diseases as formerly supposed. It must be understood, however, that there are many intermediate forms between these two varieties, which often merge into each other so closely that a distinction is impossible. Rabies runs an acute and invariably fatal course in from two to ten days.

Furious rabies has three stages:

1. The premonitory stage.

2. The maniacal stage.
3. The paralytic stage.

The *premonitory stage* lasts on an average from twelve to forty-eight hours and is characterized by an alteration in the behavior and disposition of the patient. The animal becomes either morose and sullen, furtive and irritable or shows just the opposite characteristics, an increased affection and desire for its master's notice. Restlessness and nervousness, and a capricious and perverted appetite are well marked symptoms. In some cases hyperesthesia in the region of the site of inoculation causes the patient to bite at the seat of injury. There is a tendency to gnaw and tear up at whatever comes across his way and he sometimes swallows foreign objects as stones, earth, grass, rags, pieces of wood and even excrement. In other cases the patient continually licks his genital organs and shows sexual excitement. In this stage is noticed slight difficulty in swallowing, inclination to vomit, dyspnea and symptoms of choking. Constipation is usually present.

The *maniacal stage* lasts three or four days and is characterized by attacks of mania and convulsions with remissions. The patient evinces an overwhelming desire to run away from home, tearing down doors and kennels or breaking his chain in order to effect his escape.

At first the animal shows only slight tendency to bite, running along aimlessly, sometimes for long distances, but later on it begins snapping at imaginary objects, or at other animals or people that are directly in its way, until finally losing all control and impelled by some uncontrollable impulse, it savagely and aggressively attacks everything in sight. In some cases the patient may bite and tear its own body, being apparently insensible to pain. A prominent symptom in this stage is the alteration in the voice which manifests itself as a peculiarly hoarse, howling bark, the first notes of which are prolonged into a high-pitched, long-drawn-out howl.

In the *paralytic stage* the patient is much emaciated, the eyes are deeply sunken, staring and glassy. There is usually external strabismus of one eye. The patient now becomes gradually paralyzed, swallowing becomes impossible and the saliva runs out of the mouth in ropy masses. In time comes paralysis of the lower jaw which hangs down, allowing the tongue to protrude. This condition is followed by paralysis of the hind quarters which manifests itself in staggering, stumbling and by increased bodily weakness. The muscles of the tail, rectum and bladder become paralyzed and symptoms of great depression are alternated with paroxysms of excitement that gradually become rarer and rarer, but which, throughout the course of the disease, are increased in violence by the sight of another dog. Finally the paralytic condition becomes complete and the animals sufferings are ended by death.

Dumb Rabies is distinguished from the furious type by the early onset of the paralytic symptoms and the absence of the desire to bite unless greatly aggravated. The patient early becomes dull and listless and often appears to have some slight difficulty in swallowing; anorexia is always present. It is in cases of dumb rabies that the veterinarian needs to use much caution when called upon to examine an animal that is supposed to have a "bone in its throat." The paralysis of the lower jaw taxes place quite early in the course of the disease and is rapidly followed by the general paralytic condition described above, death usually taking place about the third day.

Treatment: The disease being quite unamenable to therapeutic measures, any treatment is useless in either furious or the dumb forms, but valuable animals may be saved before symptoms have developed if given the Pasteur Treatment as soon as possible after being bitten by a rabid animal.

The foregoing paragraph represents

the consensus of opinion of veterinarians on the treatment of rabies; however, it should be mentioned that quite recently a number of recoveries from rabies brought about by the hypodermic use of quinine or quinine and urea hydrochloride, have been reported by doctors of human medicine.

Tetanus

TETANUS is a specific infective disease, characterized by tonic muscular spasms, and caused by the Bacillus tetani. The spores of the Bacillus tetani are ubiquitous and gain entrance to the animal's system through wounds of the skin, however slight. The anaerobic properties of this bacillus make punctured and penetrating wounds, the most favorable environment for its development. Suppurating wounds are also favorable to the development of the tetanus bacillus on account of the oxygen used up by the pyogenic organisms, so that the deeper portions of the wound anaerobic organisms to develop. The organisms remain at the site of inoculamay be devoid of oxygen thus allowing tion, the symptoms being produced by the action of their katabolic products or toxins on the nerve centers.

Tetanus is unusual in dogs, this animal being rather less susceptible to this disease than is man and far less susceptible than the horse.

Symptoms: The general symptoms of tetanus are a greatly increased irritability of nervous reflex and tonic spasms of the various muscular groups. Trismus or spasms of the masicatory muscles occurs causing the jaws to be firmly held together, hence the popular name of "lockjaw." The recti occulorum when affected by spasm cause the eyes to retract within their orbits and the mebrana nictitans to protrude over the eyeballs. The whole body becomes rigid; the extremities stiff and stilt-like and the neck outstretched, the tail elevated. Breathing is interfered with by the spasm of the inspiratory muscles.

Depending upon which group of muscles are mainly affected, the patient's body assumes various positions when the spasms are present. The head and tail may be elevated and the back depressed; the back may be arched and the abdomen tucked up; the body may be curved laterally. The temperature is at first only moderately elevated but in cases approaching a fatal termination it may reach 108°-110° F. and continue to rise for some time after death.

The prognosis should be guarded. It is as a rule slightly more favorable in the dog than in the horse.

Treatment: Consists essentially in good nursing and the avoidance of all excitement and noise. The patient should be placed in a darkened room and kept absolutely quiet as on account of the extreme irritability of the nervous reflexes, the slightest sound or movement may induce or aggravate the spasms.

Nerve sedatives are the drugs indicated, in order to endeavor to control the spasms, the most valuable being gelsemium and lobelia. In exceptionally acute cases chloroform combined with H-M-C in full doses must be used to induce complete anesthesia in order to relax the patient. It must be remembered that tetanus patients require doses far in excess of the usual ones, to produce the desired effect and that these drugs may be pushed with safety. Elimination per anum and through kidneys must be provided for; enemas of pre-digested milk or beef given to sustain life, if the patient is unable to eat.

Tetanus antitoxin, as a curative, is useless, but as a prophylactic is of undoubted benefit if administered before the appearance of symptoms.

POINTED OPINIONS by Readers ON LIVE TOPICS of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the thanks of the editor, the approval of the veterinary profession and the lasting gratitude of those who are aided by your suggestions.

The Preliminary Examination

In the present day the facilities for acquiring a good general education are far greater than in former times. In every rank of life this is quite apparent, and a comparison of the methods of the "hedge" schoolmaster with those of the present-day National and Board schools provides much food for reflection. The teachers are of a different type, and opportunities are offered to the young which previously did not exist. All methods of teaching have altered for the better, and this applies not only to the schools provided for the workman's children, but also to those intended for the higher ranks of society.

Modern Improvements

Progress is the master-word on every side, and the universities are contributing to the advancement by offering facilities which in former times could hardly be imagined. It is not then a matter for surprise to find that in all professions the matriculation examination which was considered of a sufficiently high standard in years gone by has now been raised to a considerable extent. The General Medical Council has found it necessary and desirable to demand a higher degree of general knowledge from those who seek to register as medical students; this standard is being gradually increased, and we do not hear of any objections being raised to this progressive action, nor is there any falling off in the number of students resulting therefrom.

In all professions, with the exception of the veterinary, this increase in the standard of the preliminary examination is deemed advisable, and it appears to us that, owing to a recent discussion at the last meeting of the Council of the Royal College of Veterinary Surgeons, the question is one which demands serious consideration.

Entrance Examination Standards

It seems hardly necessary to enter into the question as to the reasons for demanding a proper standard of entrance examination for the so-called "learned" professions of "church, army, physic, law," and to these may be added dentistry and engineering. Owing to the nature of the subjects which have to be studied in the curriculum, it is essential for the aspirants to these callings to possess a good general education. But there are other reasons. The public expect the members of these professions to be, at any rate, fairly well educated, in addition to possessing a thorough knowledge of their respective duties. Although professional training is in itself an education, yet something more is demanded, and the man whose duties bring him into contact with an educated community must, if he wishes to make

the best use of his talents, show that his knowledge is not confined to the subjects of his profession.

It might be argued that examples are not wanting to demonstrate how professional men gained success and a good social position, although their general education left much to be desired at the commencement of their career. But we would point out that in the large majority, if not in all of such instances, the successful men educated themselves to the required standard after they had graduated. We do not wish to convey a wrong impression, *viz.*, that a proper standard of general education of necessity means culture and refinement, but at any rate it paves the way for these desirable attributes, just as it prepares the mind for the reception of scientific details and encourages the faculty of thinking and observing.

Inferior Veterinary "Prelims"

If we agree that for the profession mentioned a good general education is essential, it will then be a matter for serious consideration when we come to inquire why an inferior standard is held to suffice for aspirants to the veterinary profession. Are the subjects in the veterinary curriculum more easily mastered than those in human medicine? Certainly not.

Do the public expect a similar standard of general education in the veterinary surgeon and in the medical man? The answer is in the affirmative in many instances, but unfortunately their expectations are not always realized.

As there is now a probability that all universities will establish a veterinary faculty, is it not very desirable that the veterinary and the medical students should possess the same standard of general education? Most assuredly yes, unless it is the general desire that an invidious distinction should be made. Are veterinary students as a class inferiorly educated? No. Have they not the same facilities for education as medical students? Yes.

The Present Standard

No doubt if an inferior standard only is demanded it is quite clear that intending students will not take the trouble to educate themselves to any extent. Is the present standard sufficient? Having some lilttle experience of examination papers, we can definitely state that on very many occasions the query has been put, "How did that student ever manage to pass a matriculation examination?" Writing, spelling, composition, etc., which would be a disgrace to the son of a working man, were not an uncommon experience. What is the explanation? A very inferior standard of examination is the true answer.

The matter is now brought to very narrow limits, and the reason why a low standard of preliminary examination is upheld in certain quarters is that it enables the schools to secure a larger number of students. In other words, we are asked to believe that if a proper preliminary examination were enforced, a large number of students would be unable to pass it. What an insult to intending students! What an admission on the part of those in authority that educated men are not necessary for the practice of veterinary medicine and surgery!

The Question of Dearth of Students

One professor, who has now retired to a more lucrative position (let us hope) once remarked that if the standard of the matriculation examination were raised there would be a dearth of veterinary surgeons in the West of Scotland! If the entire question is to be based on the supply of students, then let it go forth to the public that parents must educate their sons intended for the veterinary profession to the same extent as those intended for other professions.

Independence on the Council

It is really grotesque to read the flimsy excuses put forward by those who desire to retain the present farce in the way of education. Compare the standard of examination in the Continental schools with that adopted in the British Isles,

and the comparison will give some food for reflection. If the Royal College of Veterinary Surgeons is to retain its powers as the only portal to grant a license to practice, it must needs progress with the times; the paltry excuse that it must enforce a low standard in order to attract students is really too puerile.

We are much pleased to find that some members of Council possess sufficient independence to oppose the retrograde inclination with reference to preliminary education which finds favor with a certain section. We hope that at the forthcoming election of Members of Council practitioners will take care to vote for candidates who will support measures for ensuring a proper standard of preliminary examination, and who will not be influenced by "the voice of the charmer, charm he never so wisely."—Editorial in *The Veterinary News,* London, England.

A HIGH STANDARD FOR VETERINARY EDUCATION

I come much in contact with members of the medical profession and, therefore know the value they set on a high standard of education.

Claims are constantly being made that our profession should be treated as the equal of the medical profession; that being so it is imperative that our educational entrance examination and scientific training should be equal if we mean to assert those claims; for students who intend to apply for appointments in the Army, Board of Agriculture, or Municipal Service, a high standard and thorough scientific training is an absolute necessity.

During 1913 I visited the Veterinary Colleges of Argentina; these are affiliated with the Universities there, and the entrance examination is the same for both medical and veterinary students. As showing the progress being made in that young country the veterinary course of training from January 1, 1914, is extended to five years, and the scientific standard equals that of the medical student.

Therefore, in the interests of students who are too young to judge what is necessary for their future, in the interests of their parents who will naturally desire to see their sons take a high place in the scientific world, and last, but not least, in the interests of progress in our profession I would strongly urge that the entrance examination should equal that adopted by the General Medical Council.—T. Dunlop Young, in *The Veterinary News.*

Proportionate Output of Veterinary Colleges

Annual Output.	Prop. to Population.
Denmark..... 31	1 in 133,000
Germany..... 270-300	1 in 210,000
U. S. A..... 750	1 in 120,000
France..... 120-150	1 in 300,000
Sweden..... 20	1 in 275,000
British Isles... 85	1 in 500,000

—*The Veterinary News,* London.

SECRETS OF DENMARK'S SUCCESS IN AGRICULTURE

Professor E. G. Cooley, formerly superintendent of schools in Chicago, in an article published in the *Record-Herald* (Chicago) on Danish Agriculture, names the following as the secrets of its success:

1. System of apprenticeship.
2. Winter schools for farmers.
3. The Royal Veterinary School.
4. The Dalum Agricultural School.

Of the Royal Veterinary School he says:

"Anyone may enter the school as an 'extraordinary student,' but those planning to take the examinations at the end of the extension courses must first qualify by taking an entrance examination. Usually about one-half receive free instruction and one-half of these receive scholarships which pay them from five to six dollars a month."

COLLECTIONS AND CREDITS*

This is a subject that for some reason is rarely if ever discussed at our meetings, although I think you will all agree that it is a fairly important one. Therefore I intend to give you my views and personal observations on the subject so that you may compare them with your own and possibly strike a happy medium that will enable you to be more successful in your collections, thereby making it possible for you to indulge in a few of the luxuries of life such as a good (?) nickel cigar, for you will all admit that one sometimes tires of rolling one's own cigarettes and often longs for the aroma of a good (?) five-center.

Unfortunately, we have several classes of clients to deal with, according to their ability and inclination to pay, and the sooner we recognize this fact the better off we shall be. If we could treat them all as one class it would simplify matters greatly, but such is not the case.

Broadly speaking, we have five classes of clients to deal with from a financial point of view. Here they are:

1. Those that pay cash or who pay in 30 days.
2. Those that can pay but wont.
3. Those that would like to pay but cannot.
4. The dead beats.
5. The charity cases.

I am speaking now from the standpoint of the practitioner who is thoroughly established; those who are just establishing themselves will have to study their clients and act accordingly.

Let us take No. 1, "cash or thirty days." This is easy to dispose of. If you do not get paid at the termination of your visit, wait till the first of the month and send him a bill, he will remit in ten days or so.

Number 2, "those that can pay but wont." This class gentlemen is the hardest we have to deal with, for as a rule they are fairly well off in worldly goods, have more or less stock all the time, which makes them desirable clients, and as such we dislike to make any move that might prove offensive to them; but on the other hand if we cannot get a settlement from them they are a positive detriment to us. I have often sent monthly statements for ten months and then failed to get an expression from them.

In this class you will find two groups of individuals, first, one group that seem to treat your bills and statements with positive indifference; the next group include those that actually hate to part with the money.

The first group is easy to handle, never mail this man a bill, you are wasting good stamps and stationery, but present your bill in person, and nine times out of ten you will find he will pay you on the spot.

The second group calls for considerable tact on your part if you would be successful and at the same time retain his friendship.

If you present your bill in person to this man he will take it cheerfully, put it in his pocket and immediately forget it. In all probability he will start at once a lengthy discourse on the tariff, votes for women, the social evil, or any other burning topic of the day, and sidetrack you right there.

Experience has taught me not to waste any time talking to this man. On the first of the month I mail him an itemized account. If he does not acknowledge this in 30 days, I send him a bill and below call his attention to the fact that this is his second bill and that a settlement would be very acceptable.

If after 30 more days I fail to get an expression from him I send another bill and below state that this is the third account rendered, and that if it is not settled inside of thirty days I will be forced to resort to other means to obtain a settlement. This will bring 60 per cent of them to you. It will be necessary with the rest to have a lawyer write a nice letter requesting a settlement at once.

*Presented at Midwinter Meeting of the Montana Veterinary Medical Association, Bozeman, January, 1914.

Such a procedure will bring nine out of ten.

I have found this method to work well, inasmuch as they cannot accuse you of crowding them any, or that you didn't state your position clearly.

Now we come to the third class of clients, "those who would like to pay but cannot." I have all the sympathy in the world for these people.

As a rule, they have only a few head of stock, are hard workers, industrious and strictly honest, but maybe they had a short crop, or work was hard to get, or possibly sickness in the family depleted their small cash reserve.

I consider this class a good risk. The first of the month I send them a bill so they may know just what they owe.

Fifty per cent of them will come and see you and tell you they cannot do anything now toward a settlement; the other half try and see and find out their position. They probably also cannot pay now. All right; now don't send these people any more bills, just forget it for the time being; when they have the money they will surely come around and pay you.

Class 4, the "dead beats," we all have them, they are parasites; the word men applied to this class is a libel on the human race.

I think these are the only people we are justified in refusing to help when they call us; unless some one guarantees the fee. This is the class that as a rule you will see in the saloon drinking the tallest glass of beer, talking the loudest. and making himself a nuisance in general. He will repeatedly lie to you, and is not above stealing. He is also a "wise guy" and generally has his horse poisoned with aconite or opium by the time you get there. You will find this class to be the greatest "knockers" you have to deal with. When you have him thoroughly identified treat him accordingly. You are justified in refusing his call for help unless you see some money in sight.

Life is too short to attempt collections on this class; the only thing we can do with this class is see that he don't get you again.

Last, but not least, we come to the "charity cases." We are all bound to meet them, and I want to say right now, never neglect them. This class usually embraces some poverty-stricken family who perhaps have one cow and a few chickens as a sole means of support; it may be a poor widow or a wife has to support the family. Possibly the minister's old mare's teeth need attention, and said minister has not seen a piece of real money since the Easter collection. Then again a little boy or girl might come to you with a dog suffering with distemper that isn't worth two cents but looks like ten dollars to the poor kid. Whatever the case may be, I repeat do not neglect them. You can never tell when these same people will be in a position to do you a lot of good. Never make a charge

You will find some that through pride will come around when they get their hands on a dollar or two and insist on paying you; very well, charge them a dollar, or any amount that will satisfy them; do not refuse to take their money; they might resent such treatment.

There, gentlemen, you have my personal views and experiences on the subject of collections.

Study human nature a little; use good judgment, and see that your method of collecting a bill is one that is calculated to bring the best results in any particular case.

I can hardly conclude this paper without turning the spot light on ourselves. Are we careful to apply the golden rule to our creditors?

I have been told by several credit men that a doctor is the poorest risk they have to deal with, and I guess it is more or less true, too. By all means establish and keep your credit good in your community. Pay your bills promptly and don't buy anything that you cannot see your way clear to pay for without first consulting your dealer.

Especially true is this of the young practitioner. It is bad enough to be without funds but to be without funds and credit both is disastrous.

If your credit is good you don't need so much ready money, then again you will give the profession in general a big boost if you establish a reputation for prompt payments in your own community.

Frederick C. Hull, M.D.V.
Conrad, Mont.

IMPACTION OF THE COLON DUE TO DRY FORAGE

Impactions of the colon are becoming a serious question to the farmers of Cowley County, Kansas, and I presume to the whole state as about the same conditions exist throughout the state. Owing to the severe drouth of 1913 all feed with the exception of alfalfa is of a very poor quality. All rough feed is devoid of all nutrition and is like feeding dry sticks, consequently we are having numerous cases of impaction of the colon. They are becoming so numerous that farmers are beginning to think the western Kansas horse-plague has struck them.

On January 31st, I was called ten miles in the country to see a case of so-called colic and on my arrival I found two patients instead of one. The owner had lost one horse a few days before and from his description of the case, I presume it was the same thing that was now troubling the two horses. They were eating oats straw and the owner was congratulating himself on having such fine feed. I made an examination of it and found it so short and brittle that he had to carry it in a tub in order to get it into the manger.

Treatment: As the diagnosis was easy by an examination *per rectum*, I proceeded with my treatment. The treatment in these cases is the burning question. Before going further, I want to say I heartily commend the treatments advocated by Dr. L. A. Merillat in his scientific and practical article on "Surgical Treatment of Colics." I have used every one of them with the exception of the large doses of ether in linseed oil and I shall try that on the first case that presents itself. Dr. Merillat certainly made a strong point in what he said about the use of eserine and arecoline. I think it would be safe to say that as many horses are killed as saved by the promiscuous use of these two drugs. They are valuable remedies when used in their place but very dangerous when used in impactions. I once knew an empiric that used eserine in five-grain doses. How many he killed, you can guess.

In commenting on the very valuable article of Dr. Merillat's, I am forgetting to treat my two patients. I started my treatment by giving each one two ounces of carbonate of ammonia in capsules along with a large aloetic pill. I then gave each one a half-grain of strychnine and repeated at short intervals. (Dr. H. Jensen says: "Don't look for a better intestinal stimulant than strychnine.") I then passed the stomach tube and injected into the stomach all the warm water the animals could stand, repeating this in two hours. I then began the flushing of floating colon according to the method described by Dr. Merillat, i. e., passing the tube as far as possible and packing the rectum to prevent the return of water. This method looked at first like it was going to bring results but I finally had to give it up as useless in these cases. I then passed the trocar and pumped water into the colon through the canula but despite the fact that the impaction had water in front and behind and in the mass the muscular walls would not contract enough to move the mass along.

I kept up the treatment until the next day noon, when one of the patients died. Having other calls awaiting me, I left for town. The owner, was so discouraged that he refused to

send for more medicine as I had depleted my supply and could not leave any, but he continued treatment by giving the horse large doses of melted lard. The animal died the next day.

I believe I have tried out every treatment that looks reasonable or has been advocated by competent men, but I find that when old nature refuses to assist, all our efforts are futile. If any of the readers of this journal know of any methods whereby the muscular wall of the colon can be stimulated to action, after it has been paralized, or partially so, by stretching over a large impaction, I shall be glad to hear from them. I believe the veterinarians and readers of this journal would derive much benefit by discussing Dr. Merillat's article for the next two or three months. Colics are among the most serious things the veterinarian has to deal with and I believe we know but little about them all. If any one has a better treatment than that given above for impactions of the colon, please speak out in the next issue.

I. G. Wimsett, D. V. M.
Winfield, Kans.

A QUESTION OF BARRENNESS

I write you in regard to some trouble in this locality with barren cows among the dairy men. One man had seven good healthy Holstein cows in his herd that failed to get in calf.

I have examined several of these cows and find most of them in normal condition except a few whose vagina contained a straw-colored, fetid fluid. I have irrigated with boric acid solution, have used Hoag's Breeding Powders, have changed bulls without any results. There has been no abortion in these herds. The cows are in a good thrifty condition, are fed alfalfa hay silage and have a run on wheat pasture.

All these cows calved last summer and have come in heat regularly. Please advise me at once.

Wm. Payton, D. V. S.
Lewis, Kansas.

ADVERTISING FOR VETERINARIANS

Looking through the March number, I was very much interested in your article under the head of "Advertising for Veterinarians."

It gives me pleasure to read such articles as I am a graduate and have practiced in several country towns since my leaving college and I want to say that I never believed in the bill-poster or large personal cards on the reverse side of which is printed. "The Age Of The Horse" or similar matter. However, I will say that I think that it is very advisable for the young graduate to have small cards printed with his name, degree, telephone numbers, both office and residence.

As to the means of distributing them, I will describe the method, I am using at present, to get before the public in a professional way. I have been practicing here under another veterinarian for some time but opened up an office for myself recently and I simply took the telephone directory and selected the names of firms whom I thought had stock and to each I mailed my card. I am waiting for results which to date are very satisfactory.

I make it a rule, at the end of every month when I send out my statements to enclose a card. I do not believe in posting large cards in stables, especially in a city practice. I firmly believe it pays to advertise that way but I do not believe it is ethical to ask a man for his business. Nine times out of ten when you do he will want you to do the practice for one-half the regular fee. I trust that I am in the right and that this letter may be of value to some.

Memphis, Tenn. H. R. Schaefer.

MAMMITIS IN A COW, TREATED BY AUTOGENOUS VACCINES

Bacterial invasions of the mammary glands in milch cows are very common in practice; unfortunately, however, the bacteriology of these important organs is still in a nebulous condition, and to us as a profession this is far from creditable. The mammary gland in disease is particularly suited for the careful carrying out of vaccine therapy, the organ itself being largely made up of a network of capillary blood-vessels, which fact alone facilitates the free access of antibodies to the bacterial foci.

In practice, however, we find a few exceptions to this rule, but these being outside the scope of this article cannot be considered here.

Clinical Aspect

The subject was a valuable pedigree milch cow (primipara), and when seen had calved seven days. The right hind quarter was intensely swollen, hot and painful to the touch. The swelling extended posteriorly to within a few inches of the vulva; the fore quarter on the same side was also slightly swollen, these conditions had been noticed for two days. In addition, when I saw her the hind quarter showed a dark-blue circular area close to the teat about two inches in diameter. A sero-sanguinous fluid was milked from the right hind quarter, and a milk and water fluid with curdle from the right fore quarter.

The following day both quarters had increased in size, and the blue mark had extended in circumference and become almost black in appearance, while the surface was saturated with exudate. Two days later the swelling in the hind quarter had receded. The animal presented a more comfortable appearance, while the front quarter had slightly increased in size, and no fluid could be drawn from the teat. Two days later a slight necrosed sloughing was taking place in the region of the right hind quarter at the discoloured patch, the gland by this time having regained almost its normal size. The right front quarter, however, had become more indurated and immediately in front of it and extending to the sternum, there was a considerable swelling which I diagnosed as an infective cellulitis. The next day this swelling had increased considerably in depth, and for the first time the patient had lost her appetite, her temperature had gone up to 106° F., pulse became rapid and small in volume, and the respiratory movements hurried and shallow, these symptoms clearly pointing to septic infection or intoxication. The following day she dropped dead.

Bacterial Aspect.

On my first visit I procured *materies morbi* from the right hind quarter with a view to making a microscopic examination, and if advisable a vaccine. The end of the teat was sterilized with tincture iodine, and the sterilized syphon attached to a sterile milk aspirator was inserted into the duct, and 40 cc. of fluid aspirated.

Three smears were obtained from the fluid and stained. The field showed in great abundance under one-twelfth oil immersion a Gram-negative micrococcus; this organism appeared singly, often in twos, sometimes in threes, and seldom in groups of four. In diameter it was 0.3 micron. In broth the medium became clouded. In gelatine stab the type of growth was stratiform, liquefaction of the gelatine extending to the edges of the tube.

On agar agar incubated at 37° C. in seven hours a luxuriant growth was noted covering the whole surface, appearing in the nature of small grey glistening colonies slightly raised. These colonies rapidly diffused, and in twenty-four hours had coalesced, giving the whole field an uneven corrugated surface.

On the sixth day, with the view of obtaining material from the swelling in the subcutis, the hair was shaved and the skin sterilized with strong tincture of iodine, and the needle of a serum syringe previously sterilized by Wright's method (*i. e.*, boiled salad oil) plunged into the swelling, rotated, and moved laterally with the view of breaking down the cellular matrix and rupturing capillary blood vessels, thereby obtaining a mixture of blood and exudate. This material was used in the manner similar to making blood cultures, a peptone broth and agar tube being used and incubated at 37° C. The agar tube showed characteristic *Staphylococcus aureus* and *S. albus* colonies.

I may also add, with a view of ascertaining whether we were dealing at this stage with a true septicemia, I took at the same time blood specimens from the jugular with the usual sterile precautions, the object being the making of blood cultures. The inoculated tubes after three days' incubation remained sterile. I may add, however, although the general circulation appeared to be bacterially free at this stage, if blood had been taken later and preceding the animal's death, it is more than probable that evidences of septic infection would have been forthcoming.

Therapeutical Aspect

At the outset a course of eliminatives was given consisting of potassium nitrate, turpentine and magnesium sulphate. The tension of the udder was relieved by hot fomentations and the internal administration of citric acid. The autogenous vaccine was prepared from a twelve hours' growth of the Gram-negative micrococcus, four ampules of 4 cc. capacity being made, the doses being 500,000,000, 750,000,000, 1,250,000,000, 2,000,000,000.

Two cubic centimeters of No. 1 vaccine were injected subcutaneously about six inches. immediately below the vulva, the remaining two cc. were injected into the gluteal muscle. Forty-eight hours after injection the tension of the right hind quarter had considerably diminished. The right fore quarter had, if anything, slightly increased in size. A steady improvement was maintained in the right hind quarter.

Injection No. 2 was repeated, and when seen again two days later the right hind quarter had regained an almost normal size. The right fore quarter, however, had increased considerably, and in addition a pronounced infective cellulitis extending from this quarter to the sternum had developed. As previously stated, at this stage material was taken from this swelling which was found to contain staphylococci, and from this a vaccine was made, but the day upon which this vaccine was to be administered the animal died.

This case, I think, is not without interest. The immune bodies responded in a remarkable degree to the stimulus of the micrococcal vaccine. In all my experience of mammitis I have never seen such an inflamed and indurated udder resolve itself so rapidly as the right hind quarter, and I cannot attribute such marked improvement to any other cause than the vaccine. Moreover, my experience of these cases is when necrosis sets in the line of demarcation usually involves the whole udder, or at least a whole quarter, and should the animal live takes many days to slough. In this case the sloughing was very rapid and confined to a very limited area. As regards the cellulitis, I regret now an earlier examination of the *materies morbi* was not carried out, for I believe, had a staphylococcus vaccine been made and injected, the patient would have had a better chance of recovery.

In all forms of therapeutics rule of thumb practice is dangerous, but in vac-

cine therapy it is fatal, as I think this case would show. I consider vaccine therapy did here all it was required to do, *i. e.*, get rid of the Gram-negative micrococcus and its effects, and to expect a vaccine derived from this bacterium to act upon a staphyloccocal invasion of course we know is absurd.

The onus rests with me. I ought to have made an examination of the swelling indicative of cellulitis as soon as it was seen, but I must confess pressure of work made me put it off, and I was hopeful, as the patient was a very healthy one, her natural protective forces would be sufficient to keep extension well in hand. This proved to be wrong, and I record the case as a warning to others who may at times incline to expect too much from the *vis medicatrix naturæ*.—W. M. Scott, F. R. C. V. S., in *The Veterinary News*, London, England.

Comment.—Had the treatment of this case been supplemented by the intelligent use of a stock bacterin containing killed staphylococcus and streptococcus organisms recovery would probably have occurred. Owing to their ubiquity the practitioner is all but justified in assuming the presence staphylococci or streptococci as primary or secondary factors in nearly all infections of animals. Ablation of the mammary gland, or perhaps of only one quarter of it, on the occasion of Mr. Scott's first call in all probability would have saved the animal's life.

"WARBLES" IN A COLT

When treating a three-year-old colt for catarrh of the sinuses of the head, my attention was called to two small lumps on the colts rump.

On examination, the lumps appeared to be identical to those caused by the Hypoderma lineata larva in cattle.

I noticed a small opening at the top of the enlargements, and upon squeezing it, out popped a warble.

I have never heard of this parasite affecting horses, and consider it unusual.

J. C. Wickham.

Galion, Ohio.

A MOMENTARY VIEW OF THE B. A. I. INSPECTOR AND HIS WORK

Since I spent a very short time in the B. A. I. service, I have been requested to write an article giving my views of the service, as a possible guide to others who are thinking of entering it.

I wish to say in the beginning that I think the Bureau is doing good work and is being perfected every day and as far as my acquaintance with its employes goes, I must say that they are all above par. I am writing this in an endeavor to inform the veterinarian who has had no experience in the service just what it is like.

It makes no difference where you go, be it the finest packing house in the land or the poorest, the place and the conditions under which you work can scarcely be called ideal. Every slaughtering floor is more or less dirty and (on a killing floor would be a poor place to wear your Sunday clothes) must be washed almost constantly with streams of water to keep them usable. Some days the fog in these rooms is so dense that you can see but a few feet and the ventilation is not of the best; it is impossible to remove the odor of the viscera and dressed carcasses, and these to the individual whose olfactory nerves are very refractory to constant irritation is not at all pleasant. There is scarcely an inspector but what will tell you that breathing the pure fresh air and smelling the odors from the green grass and the flowers is much more pleasant than breathing the damp foul air of an abattoir or smelling the odor from "an old cow's paunch" that has been filled to overflowing with cottonseed meal.

It becomes very monotonous to have nothing to look at or nothing to do but the same thing day after day, month

after month. All these carcasses after the hide is removed look nearly the same. We learn to tell the pathological conditions that render them unfit for food. These conditions differ only in degree of affection, as a case of tuberculosis, emaciation, etc., is the same wherever you find it. If a person had to stand and watch a thousand black horses pass by and no other colors, it would become very monotonous but let a thousand pass by in the various colors and combinations it becomes more interesting.

Inspection gets to be a sort of a mechanical job: The eyes are trained to see and upon the sight of any little abnormality they are quick to recognize it, even before we have time to give it a thought; it also becomes mechanical because there is almost no variation in the work. Almost any individual can be trained to detect nearly all of the microscopical pathological conditions that affect animals, but their judgment on conditions that required a fine discrimination would be very poor, as they would not possess the knowledge of the cause and effect of the different diseased conditions.

The employees of these large packing plants are chiefly foreigners and colored, and very few of them are intelligent, and as a rule they are not very agreeable to work around.

It seems that about 95 per cent of veterinary inspectors lose all ambition and desire to study and progress along the lines of their profession; each figures that he can do his work all right without it, so what's the use. An astonishingly small percentage of them subscribe for veterinary periodicals and they buy almost no new books, although their need for both journals and books is far greater than that of the practitioner whose work is varied and of itself instructive.

Chances in the service for promotion for the average man are very poor; as very few men really make good in the service in this way; the older men are usually given the preference.

Chances for an increase of pay in the service over that of the entrance, is poor as the appropriation for the Bureau will not permit it.

Chances of being transferred and of making new acquaintances every few months are very good; this however is an objectionable feature with many. The Bureau has the power to transfer its employees as it sees fit.

As soon as one enters the service his knowledge of theory and practice begins to get away from him, and will continue to do so, more or less, as long as one retains a position in which he is unable to make practical use of his knowledge. Several years in the service almost always renders a veterinarian incapable of making a success in practice.

You are required to report for duty in person every day whether you work or not and make out your time slip. Some places even working part of the Sundays. You only get your days off when the packer does not care to kill, hence you have no say about it.

I do not think the Bureau offers the individual who is energetic, ambitious and a good practitioner, the proper outlet for his activities or his ability. Get out in practice where you can meet your brother practitioners on an ethical basis, and by fair and honest competition build up a nice practice and get amply rewarded for and have an agreeable outlet for your activities and ability. Here you can breathe the purest air that it is possible to obtain and be your own boss. It seems that practice is by far a nicer and more agreeable position than that of veterinary inspector.

G. H. Conn., D.V.M.
Late Veterinary Inspector B. A. I.,
Prairie Depot, O.

What do you consider a reasonable compensation for a veterinarian for administering hog cholera serum, when the owner furnishes the serum? How much per hog would you charge for your time and labor?

MITRAL DISEASE IN THE HORSE

Subject.—A hunter, aged about 26 years.

History.—The animal for some time had been put to slow harness work. Until lately he had been healthy to all appearances, but on a few occasions showed an œdematous condition of the sheath. At present he shows emaciation, a capricious appetite, an œdematous swelling between the fore limbs, slight edema along the abdominal region, and the sheath is much swollen. The pulse is difficult to count, and is irregular and weak, the respirations are slightly accelerated, there is an occasional cough, the visible mucosæ are pallid, the coat is rough and staring. Auscultation of the cardiac region shows marked irregularity of the cardiac impulse. At the apex the sounds of the heart cannot be clearly differentiated from each other; the action of the heart is tumultuous. Towards the base of the heart a loud grating bellows murmur, systolic in character, is easily detected; it totally occludes the first sound; the second sound is much louder than normal. No increase in the area of cardiac dullness than normal. On inspection of the cardiac region, a distinct pulsation is clearly visible towards the base of the heart. A well-marked jugular pulse is present on both sides; with each systole a strong wave passes up the vein to its full extent.

No treatment was adopted, and the animal was destroyed.

Autopsy.—The heart was enlarged, but normal in colour. The left auricle was much dilated; the mitral valve was very much thickened and hard in texture; between the insertions of the chordæ tendineæ a few small white, cauliflower-like growths were found. The chordæ tendineæ were much thicker than normal. The left ventricle was hypertrophied, but not dilated. The right auricle and right ventricle were dilated. The other valves were normal. No other lesions were detected; the liver was much smaller than usual, but presented no lesions microscopically.

Remarks.—According to the textbooks, a well-marked jugular pulse is not one of the characteristic symptoms of mitral disease.

My experience of cardiac diseases in the horse leads me to the conclusion that, as compared with human medicine, the facilities for differential diagnosis in equines leave much to be desired.

A well-known clinical teacher in human medicine used to tell his students to examine each case of cardiac disease daily and note down the phenomena observed, but not to compare the notes with those taken on previous days, then at the end of a week make the comparison, and the result would be interesting.

Further remarks are postponed, and will appear in a special article on "Cardiac Diseases," which we hope to publish shortly.—E. Wallis Hoare, F. R. C. V. S., in *The Veterinary News,* London, England.

IMPACTION OF THE ESOPHAGUS

On February 6 of last year, whilst passing a farm I was called to a three-year-old cart mare, said to be unable to swallow, having been found in present condition that morning. There was profuse salivation, a roaring noise, gulping movements, and a dirty, food-stained discharge from the nostrils. Water could be swallowed, but was very shortly returned by the nostrils, thus showing that the actual act of deglutition was unimpaired.

On the left side just below the parotid gland was a fairly well-defined swelling, doughy to the feel, with no heat and little or no pain on manipulation. I

ordered hot fomentations and massage to the parts, steamed head, and gave a belladonna electuary. Next day the mare was better, was able to eat and the swelling was much smaller, though not entirely gone. I examined mouth and throat and found only a slightly indurated condition of part of the pharynx, suggesting an old injury.

Soft food was advised with plenty of linseed and I gave powders containing nux vomica. A week later another attack occurred, but by adopting the previous treatment it soon passed off. After another week I was again called and repeated the previous treatment, but relief did not occur for thirty-six hours.

March 10 I was called again and was told the mare had been in present condition for two days. This time the swelling had extended a couple of inches lower down. I passed probang with no success. Repeated previous treatment.

Owing to a misunderstanding I was not informed until the 13th that she was still unrelieved. She now presented a pitiful picture, being "tucked up" to a marked degree, with wild, anxious expression, and often roamed around the box neighing. When water was offered she got very excited, making eager attempts at swallowing, but all was immediately returned through the nostrils.

An enema of salt and water in the proportion of normal saline solution was at once given. It was satisfying to note its results: how the wild expression disappeared, giving way to one of comparative content. The pulse also showed a marked improvement, both as regards rapidity and tone.

The question of an operation had been previously discussed, but the owner wished to delay it as long as possible in the hope that the attack would again pass off. Nutrient enemata of milk, beef tea, and sugar and water were alternately given several times a day. Local treatment assiduously applied night and day. Also injections of small doses of eserine with no result. By the 15th her condition showed no improvement and it was decided to operate.

After an injection of codrenin I made an incision over the swelling, just at the border of the parotid gland, and separated the underlying tissues carefully. The esophagus was reached and was then incised and found to be firmly impacted with food, mostly hay. Some was removed, but as it smelt very offensively and the wound was still bleeding slightly, its complete removal was left until evening, when I then renewed operations, and to my surprise and disappointment I found the impaction was not localized, but actually extended the whole length of the gullet—from mouth to stomach. Not being prepared for such a condition and having no suitable instruments at hand, I had to again leave her.

The next morning, armed with an assortment of syringes, I proceeded to remove the impacted material and found it no easy task. A rubber tube was inserted into the esophagus through which warm water was injected, afterwards reversing the syringe so as to act as a syphon.

In the cervical portion so great was the dilatation and so firm the impaction that very slow progress was made. After two hours' tedious work the whole length was cleared, when for the first time for ten days fluid was enabled to reach the stomach. She was "tube fed" several times a day with milk, eggs, gruel, etc., and was occasionally given water by mouth, but this was discharged through the wound.

Tube feeding was continued for seventeen days, when the wound closing she could eat soft mashes. Improvement continued so that by the end of April she could eat hay. She was now turned out, when she speedily regained condition, becoming quite fat. The wound

healed so well as to be barely visible. The owner was warned that in all probability as the wound contracted she would choke again. However, so far there were no signs of it, and by the end of May she was at work again. Towards the end of July slight choking attacks occurred, which were, however, of short duration.

A course of powders containing potassium iodide, iron sulphate and nux vomica had been previously given. This was repeated and graduated probangs were passed into the gullet with, however, no appreciable effect. The attacks became more frequent, but soon passed off, responding to or in spite of general treatment. Finally, at the end of September an attack occurred which did not pass off, our patience in this instance being rewarded by death. I did not see her at the time as the owner expected the attack would pass as usual. Indeed, it was a week or two before I was aware of the animal's death, thus missing an autotopsy which, without question, would have been instructive. The owner informed me that he had opened the gullet and found the operation seat nearly closed and an abscess on each side.—C. W. Cartwright, M. R. C. V. S., in *The Veterinary News,* London, England.

VETERINARY SCIENCE IN HISTORY

The following paragraphs are excerpted from an address of Dr. W. H. Dalrymple, of the Louisiana State University, delivered at the 35th annual meeting of the Louisiana State Medical Association, at New Orleans, April 20th to 23rd, 1914:

While the science of veterinary medicine is still in "swaddling clothes," if you will, on this Western Continent, Old World history dates it back to very ancient times.

There is evidence that the Assyrians and Egyptians practiced veterinary medicine and surgery at a very remote period, as we find information bearing upon the existence of veterinary practitioners in the Assyrian empire contained in the laws of Hammurabi, who flourished from 2100, B. C., as ruler over the whole of Babylon. In this code of laws, which was discovered at Susa in 1897, and has now been deciphered and the text of the inscription fully detailed, we find a scale of fees laid down for treatment. In the case of a wound, for example, the following occurs: "If a doctor of oxen or asses has treated either ox or ass for a severe wound, and cured it, the owner of the ox or ass shall give to the doctor one-sixth of a shekel of silver for his fee."

"If he has treated an ox or ass for a severe wound and caused it to die, he shall give the quarter of its price to the owner of the ox or ass."

The fees obtained in those days were evidently small.

A medical practitioner received five shekels for treating a similar injury in the son of a plebian, and ten shekels for one of higher class. But, while the penalty for non-success was relatively small in the case of the veterinarian, it was much more serious for the medical man in those days, as he lost both hands should his aristocratic patient die; or, in the case of a slave, he had to replace him.

It is rather remarkable, however, that while the flocks and herds of ancient Egypt were considered of such importance, and the fact that certain animals were sacred and their lives preserved at immense expense, no treatise has been found in which the diseases of animals is dealt with; and notwithstanding the further fact, according to Sir J. Gardner Wilkinson, F. R. S., in his Manners and Customs of Ancient Egypt, that the art of curing disease among animals was carried to great perfection by the Egyptians, and that medical and surgical aid was not confined to quadrupeds, but that poultry, also, were the objects of skilled attention.

It is not until we turn to the Greeks, however, that we obtain any very definite information with regard to the state of veterinary, as well as human, medicine, in antiquity.

One of the earliest of the Greek writers connected with veterinary science, of which there is any record, was Democritus, of Abdera, 470-402 B. C., who is said to have been the first writer on anatomy.

The celebrated Aristotle, B. C. 333, in his History of Animals ,refers to matters full of veterinary interest. Veterinary Medicine is dealt with in his Book VIII. The ass is described as suffering chiefly from a disease known as "melis." It arises in the head, there is a blood-stained discharge from the nostrils, and if the disorder descends into the lungs, the animal dies.

In this case, Aristotle was doubtless describing glanders.

In dealing with the pathology of swine, he says they suffer from three diseases. One called "branchos" is accompanied by swelling of the throat and jaw, often the foot, and occasionally the ear. He states that the neighboring parts soon rot and decay, the disease reaches the lungs and the animal then succumbs.

The above condition may represent one of two diseases, viz., anthrax or epizootic aphtha.

He also clearly describes the so-called measles of the hog, mentioning the cysts as being visible under the tongue.

These cysts are the cystic or hydatid stages of the Taenia solium of Man.

Aristotle also refers to ovariotomy or oophorectomy, having been practiced in the sow, the operation being performed after two days of fasting. The incision was made in front of the pubes, and the wound subsequently stitched up. The position, although Trendelenberg is not mentioned, was something after that fashion—the patient being hung up by the hind leg.

He describes three diseases in the dog, viz., rabies, quinsy and sore feet. Curiously enough, however, he states that Man is the only animal that will not take rabies if bitten by an affected dog. In this he was evidently behind the times; that is, our times.

From these few brief extracts from this remarkable work of Aristotle, it is evident, that at a very early period in the history of civilization, a considerable amount of sound knowledge existed on matters bearing upon veterinary medicine.

Hippocrates, 460 B. C., "the father of human medicine," while he did not write on veterinary medicine, refers to the usefulness of comparative pathology in its application to human medicine. Hippocrates evidently knew what he was talking about, and possessed a broader viewpoint, in this respect, than many of us in the 20th Century.

Until after the conquest of Greece, the Romans do not seem to have known of veterinary medicine. In fact, speaking generally, they took no interest in either human or veterinary medicine. For five centuries the medical art was unknown at Rome. The physicians came from Greece, and the practice of medicine remained in their hands until displaced by the Arabs. Domestic remedies and incantations were the usual methods of meeting disease, both in man and the lower animals.

Virgil, B. C. 70, in his Georgics, deals largely with the hygienic care of animals. He refers to the ravages of the bot-fly, scabies in sheep, and several animal plagues prevalent in Italy at that time. Among these, anthrax is clearly indicated, as he speaks of the dangerous condition of the fleece and hides to human beings handling and using them, resulting in "fiery pustules and filthy sweat overspreading his noisome body."

He also describes anthrax in swine and rabies in the dog.

Columella, a Roman citizen who lived about the beginning of the Christian era, was quite a prolific writer on hus-

bandry, including the diseases of animals. It was he who, for the first time, urged the segregation of the sick. He says: "The diseased must be separated from the sound, and not so much as one may come among them which may with contagion infect the rest." We could do with a few of the Columella type in our midst today.

Galen, who lived some 600 years later than Hippocrates, or 131-201 A. D., and was one of the "fathers of medicine," believed that veterinary observations and methods might be utilized in connection with human practice.

Vegetius Renatus, who flourished about 450-500 A. D., was the first writer in the Christian era to produce a work entirely devoted to veterinary medicine. He was a man of letters, a lover of animals, especially horses, deeply interested in veterinary science, and anxious to restore it to the position it occupied in ancient Greece. Vegetius had traveled widely, and his learning gave him access to the records which remained of the old writers. He deplored the neglected condition of veterinary education in Italy, and was determined to make an effort to resuscitate it, being stimulated in this direction by heavy losses among animals as each successive epizootic swept over the country.

Vegetius expressly points out that knowledge can never be mean and contemptible, and that there can be no shame attached to practicing a profession which can save the State from loss. He urges that the saving of animal life is economically sound, and as the curing of slaves is not considered vulgar, why, he asks, should the curing of animals, which frequently cost more to buy, be so? He appealed to the Roman public not to allow their animals to die without some attempt being made to cure them, and pointed out that, in the matter of fees, it was cheaper to pay a doctor's bill, as the saving of life, even of the cheapest horse, would suffice for the restoration to health of many.

Space forbids my following down the line of the "ancients" who were interested in the subject of veterinary medicine, nor is it feasable in a paper of this character. I would, however, like to allude, briefly, to some of the veterinary literature of the Later Roman, or Byzantine, Empire.

In the 10th Century there reigned, as Emperor of this Empire, a Constantine known as the Seventh, with the designation, Porphyrogenitus, which means, born in the purple.

Constantine realized how greatly literature and culture were degenerating in his Empire, and he endeavored to revive them in the decaying nation he was governing. He, himself, was an author and scholar, and so well read that he was described as a walking encyclopedia. He founded a learned circle for the writing of history; and literature and arts were encouraged.

Among other matters taken in hand by Constantine was that of bringing together the works of the old Byzantine authors on the veterinary art, and agriculture. He employed aid to deal separately with these two arts, collect every fragment of what had been written on the subjects, and bring them together as treatises on the veterinary art and agriculture. The writers of these fragments had all been dead for some 400 or 500 years, however, and during this time much had been irretrievably lost. But Constantine saw that, as matters were then going, the entire literature would disappear unless some effort was made to collect what still remained. All fragments dealing with the veterinary art, whether in Greek or Latin, were collected and arranged under the names of the writers, and the work was entitled the Hippiatrika; and all dealing with agriculture were collected and produced under the title, Geoponica.

These two remarkable works saved to Europe the veterinary and agricultural opinions of the Later Roman, or Byzantine Empire, and it is through them that

we are enabled to know the condition of both these arts in the Eastern Empire, just as the works of Vegetius tell us of the condition of veterinary knowledge in the Western Empire.

This remarkable work, the Hippiatrika, which contains ten books, gives evidence of the advanced character of the Byzantine school.

One of the earliest writers on the history of veterinary literature appears to have been C. F. Saboureux, a French lawyer and member of Parliament, who, in 1773, published, in six volumes, "Translations of Old Latin Works Relating to Agriculture and Veterinary Medicine."

There was also a work published by P. J. Amoreux at Montpellier in 1772, which gives a list of veterinary authors from the earliest times up to that date.

In 1783 Vitet published at Lyons an "Analysis of Authors Who Have Written on the Veterinary Art Since Vegetius;" and Amoreux, whom I have just mentioned, published at Montpellier in 1810 his "Historical Precis of the Veterinary Art," which was intended to serve as an introduction to a general veterinary bibliography.

In more modern times, there are some highly important references. The earliest is entitled "Researches in Comparative Pathology," by J. C. F. Heusinger, published in French at Cassel in 1853.

Count Ercolani, of the Veterinary School of Turin, published while in exile in 1851, "Historico-Analytical Researches on the Writers on Veterinary Science."

In 1885 Dr. Friedrich Eichbaum published at Berlin an "Outline of the History of Veterinary Science."

In 1887 Dr. A. Postolka, of Vienna, published "A History of Veterinary Science From Its Beginning to the Present Time."

France, strange to say, did not do any really serious work in the production of histories until the appearance, in 1891, of the "History of Veterinary Medicine," by L. Moulé, of Paris, with three parts issued up to date, bringing the history down to A. D. 1600. It is a complete account of all that is known of veterinary literature, recorded by one who has laboriously examined everything that was accessible; and is a work possessing all the characteristics of the talented nation to which the author belongs.

It is said that the celebrated Huzard, Inspector-General of French Veterinary Schools, formed a private library containing some 40,000 volumes, probably not an entirely professional collection, although very few veterinary works are said to be missing from it.

NOT A COLD STORAGE PLANT NOR YET A PRESERVING WORKS

I had a peculiar case of impaction in a cow. I was called January 14th, 1914, to see a cow at a farm eight miles from the office. The owner informed me that she had given birth to a nice calf about two weeks previous, and had continued in good health until the morning of the same day.

I was called at 9:30 p. m. She had a milk flow of seven gallons per day up till the morning of January 13th, when it had dropped to two gallons. After an examination of the cow, I concluded to give one and one-half pounds magnesium sulphate with one dram of fluidextract of nux vomica four times a day. On the morning of the 15th the owner telephoned that he thought she hadn't cleaned herself, and that a piece of the fetal membrane was protruding.

Upon my arrival at the farm I noticed that the supposed membrane was a loop

of small intestine protruding from the rectum. I took hold of it and commenced cleaning the parts, when it gradually started to move with a passage from the cow and nearly ten feet were in the bosin. I told the owner to hold the first loop in. I then discovered it was the intestine from a hog, and upon so informing the farmer, he told me that his cows had had access to a pasture field nearly two months before where he had burned (partially) 22 hogs which had died of hog cholera, but declared that none of the cows in the herd of 25 had had access to the pasture for two months, so undoubtedly the cow carried twenty-five feet of hog intestine in her bowels for two months. She fully recovered in three days' time to her normal flow of milk and the owner was well satisfied to save his best cow.

Minster, Ohio.

E. F. Westerheide, D. V. M.

MORE THAN THREE WEEKS' TREATMENT REQUIRED.

In the February JOURNAL there was an article written by Dr. Cecil Hayes about a fistulous withers getting well in three weeks. That is going some on a genuine case.

I have had lots of cases, both poll-evil and fistulous withers, but never could cure them in three weeks. I do cure them though in sixty to ninety days by the use of Poly-bacterins and establishing free discharge. We have had, in our hospital at one time, three cases of fistula and two of poll-evil, and have cured them, but not in three weeks.

Treatment: Our first treatment lay all sinuses open to bottom and establishing free discharge. Connect all sinuses if possible. Dress the parts three times a day with Chinosol solution or bichloride solution.

A. N. Baker & Son.

Brasher Falls, N. Y.

ABDERHALDEN'S TEST NOT PRACTICAL FOR ANIMALS

I have been doing some preliminary work with the Abderhaldin test during the past year but have been unable to devote any great amount of time to a very extenive study of it.

We have read with a great deal of interest the article "Protective Ferments and the Serodiagnosis or Pregnancy," which ran in VETERINARY MEDICINE, and are much interested in the test in so far as its application in animal husbandry is concerned. It will appear quite obvious that the optical method can not be applied in performing the test on the domestic animals because of the great expense involved in apparatus necessary to conduct the test on any number of blood samples, and because of the inconvenience when a dozen or more animals are to be tested.

The dialysis-ninhydrin method may be applied with success under ideal conditions. In veterinary science, however, it is rarely possible to obtain perfectly sterile blood samples under ordinary conditions. At least it is rare for the best of practitioners to obtain sterile samples. Another drawback to the test as regards its application to veterinary science is the fact that the blood serum must be free from hemoglobin and not more than fifteen hours old when it reaches the laboratory. This alone excludes the shipment of samples through the mails as liberation of hemoglobin always takes place to some extent as a result of the agitation received during transit. This necessitates the separation off of the serum by the veterinarian or farmer, which if he were able to do it would make the sample too old for the successful application of the test as the ferment which is to be detected is not active if the blood has been drawn for more than twenty-four to thirty hours.

The prospects are, therefore, not bright for the general application of this test in veterinary procedure which is to be re-

gretted as there is no doubt that a test for pregnancy, were it as practical as is the complement fixation test (which, by the way, might prove applicable in pregnancy) in infectious abortion and glanders, would be indeed valuable to the owners of livestock.

L. R. Himmelberger,
Lab. of Bact. and Hygiene, Mich. Agr. Col., East Lansing, Mich.

ADVERSE REPORTS ON ABDERHALDEN'S TEST

In discussing the articles on "Protective Ferments, and the Serodiagnosis of Pregnancy," by Dr. L. W. Fetzer, which was published recently in VETERINARY MEDICINE, allow me to say that you are to be congratulated upon your desire to educate the members of the Veterinary Profession on questions pertaining to immunology, biology, and the great problems incidental to parenteral protein digestion. These constitute the great scientific problems of the day, and the more of this class of matter that you can publish the better, as there is no question but that the members of the Veterinary Profession, generally speaking, are far behind the times in regard to these phases of medical science.

With regard to the Abderhalden test for pregnancy, we have had a little experience with the same as far as humans are concerned, but we have had no experience in the serodiagnosis of pregnancy in the lower animals. As to the reliability of the test in the human family, I think it is generally conceded that where the technic is correct and is safeguarded by controls a negative finding furnishes reliable proof that the serum under test was obtained from a non-pregnant individual. A positive finding, however, is not so reliable as such conditions as malignant tumors, benign tumors of the ovaries, breasts, and uterus, pulmonary tuberculosis, diseases of the liver and kidneys, inflammatory conditions of the genital organs, suppurative conditions generally, etc., etc., must be eliminated before any dependence may be placed on a positive reaction. Whether the same conditions obtain in the lower animals we do not know.

We frequently see articles in the various journals devoted to medical problems, in which some authors uphold the reliability of this test, while others report discouraging results from its use. For instance, in the recent edition of *Zentralblatt-Fur-Gynakologie,* January, 1914, Behne, who has been doing considerable work on the diagnosis of pregnancy in connection with his clinic at Keil, published an article on Abderhalden's reaction in the early diagnosis of pregnancy in cows, in which he stated that in order to rule out various confusing factors present when the Abderhalden test is tried with human beings, tried out the method on cows. Twenty-four pregnant and thirteen non-pregnant animals were employed. The author concluded that as far as the early diagnosis of pregnancy in cows is concerned this method is of no value.

Again in *Munchener Medizinische Wochenschrift,* March 3, 1914, Flatow, Hammerer, Clausz, and Dieterich, all report discouraging results following the use of the test. Flatow concludes that the proteolytic ferments of normal blood serum digest placenta tissue irrespective of whether the serum comes from men or women, pregnant or non-pregnant. The other authors mentioned claim to be unable to accept the specific nature of the protective ferments.

Gabastou, in *Semana Medica,* Jan. 29, 1914, on the other hand, reports as follows: Abderhalden's dialysis technic was used in 133 cases, and a positive reponse obtained in 101 pregnant women, but the response was also positive in a few non-pregnant persons. He remarks resignedly, that his technic was probably to blame, and he urges zealous work to simplify the technic so that it will be less complicated and thus better adapted for general practice.

The above few random statements are

made, not with any intention or desire to discourage the performance of this test; they are simply quoted to show that until much more work is done along these lines, we must be careful to interpret our findings so that we be not led astray.

I believe that the principals involved in the Abderhalden test are going to prove most valuable in clearing up many obscurities along biological and immunological lines, but the "acid test" must be applied further to Abderhalden's methods before we are justified in adopting them for the practical solution of everyday problems incidental to the diagnosis of pregnancy in the lower animals.

R. A. Archibald, D.V.S.

Oakland, Calif.

ABDERHALDEN'S TEST ENTIRELY SATISFACTORY.

I have been greatly interested in the articles in your journal on "Protective Ferments and the Sero-diagnosis of Pregnancy" by Dr. L. W. Fetzer.

I have employed this test since its first announcement by Abderhalden and my results have been excellent—both in the diagnosis of pregnancy and in tumor diagnosis. I believe that if one follows Abderhalden's technic *strictly*, the results will always be good.

Three things are very important. (1) The preparation of the subtrate (placenta for the pregnancy test and tumor tissues for the tumor test, etc.) (2) The condition of dialyzing thimbles and (3) the condition of the serum.

I personally prefer to use the substrate in dry form according to the method described (in the *Munch. Med. Woch.* 1913, page 1198,) by V. Ring.

The placenta should be cut into small cubes and the blood thoroughly washed out; then place the placenta pieces in a sieve and let water run over them for a few hours. Then place them in boiling water, which contains a few drops of glacial acetic acid. The boiling should be repeated until no more ninhydrin reaction appears. (I use according to Abderhalden's later method, 5 cc, of boiled water plus .1 of 1 per cent ninhydrin serum for this test it is far more accurate than the method originally proposed.)

The coagulated product is then moistened with toluol and finally ground in a clean grinder. Next there is added two or three times its volume of acetone; stirred up and allowed to settle. The acetone is later decanted and the residue at room temperature, dried in vacuum dessicator in which a beaker of toluol has been placed. From two to five grams of the dry, greyish-white powder is used for the test.

The dialyzer thimbles must be tested very carefully for permeability for peptones and for impermeability for albumen. These tests are made for nearly every test for I have had these dialyzers work fine for one test and fail the next time. Such dialyzers should be discarded.

I am at present working with celloidion sacks as a substitute for the dialyzer thimbles, but haven't finished my experiments in this line. Abderhalden suggested in a later publication (*Munch. Med. Woch.* 1914, page 233) that the test be made without a dialysis membrane. I tried it and I had good results. For this the serum should be placed in the test tube together with the substrate; after incubation the albumen of the serum with the substrate is precipitated through coagulation. The filtrate is then tested with ninhydrin. I had several sera that reacted the same way with the old and new method. The new is a more difficult method, and requires some experience in chemical and laboratory practice.

Abderhalden has just published suggestions for a comparatively simple test without dialyzers made as follows: The substrate is colored with aniline (carmine) and afterwards washed till no more of the stain can be washed out. Then the serum to be tested, and the stained substrate are brought together and incubated the usual time. If ferments are present

in the serum capable of digesting the substrate, the latter will be broken down and the serum will be colored by the aniline which is thus freed. If no digestion of the substrate takes place, the serum remains uncolored.

I think that a test without dialyzers will be the future Abderhalden test, and many failures due to dialyzer thimbles will be eliminated.

It is necessary that the serum should be free from hemoglobin and contamination, but exact controls will show if the serum is usable or not, so that a wrong diagnosis will not be made as a result of bad serum. More important is the fact that in herbiverous animals free peptone is present during digestion and the sample of blood for testing should be taken only after some hours abstinence from food; best in the morning before feeding.

I tested several hundreds of cases for pregnancy and for carcinoma and the results of the tests have been verified later by clinical diagnosis, and in the case of tumors by miscroscopical examination of sections made from tumors which were present. A few failures were due to bad condition of the dialyzer or of the serum. In my experience the Abderhalden test has been of the greatest value in the diagnosis of pregnancy and tumors.

I am aware that many failures have been reported with this test but I believe these, in all cases, have been due to faulty appliances or to carelessness in securing the serum. Abderhalden himself has recently expressen his deep regret that so many, with limited experience in laboratory work, have undertaken this difficult laboratory test and that they should have reported their failures, thus reflecting upon the accuracy of the test. He regrets also the over enthusiasm of numerous zealous workers who have reported their results without having properly checked them.

I have found the test a very practical one for veterinarians, having used it on a great many samples of cow and horse serum sent me from a distance and find the time required is not objectionable if the specimen is uncontaminated and free from hemoglobin.—C. A. Zell, Chicago, Ill.

ABSTRACT

(*Continued from page* 409)

mals represented three phases of the disease. Horse 1 was in the terminal stage, horse 2 in the intermediate, and horse 3 in the initial stage of the disease. As the animals showed marked improvement at once, it was decided to administer the same dose of vaccine to all the sick horses.

Six normal horses of different types were then vaccinated with 50,000,000 of each organism (bacillus and pneumococcus) in order to immunize them against the disease. They reacted in various ways, some being but slightly, if at all, affected.

The immunity conferred by vaccination apparently does not last more than one year; for the next year a slight epidemic of the same disease broke out among the horses that had been immunized the year before. The same procedure was followed, that of vaccinating the affected as well as the unaffected horses, and the epidemic was promptly eradicated, not a single case proving fatal. The immunity lasts much longer if three inoculations are given at intervals of three days. None of the horses died that were treated with vaccines, in spite of the fact that one was *in extremis*. Furthermore, none of the immunized horses developed the disease.

SUPPLEMENTAL VETERINARY TOUR

(*Continued from page* 406)

July 28th—Utrecht.
July 29th—Amsterdam.
July 30th—Amsterdam.
July 31st—Rotterdam.
August 1st—Leyden.
August 2nd—Cambridge.

August 3rd to 7th—London, attending the International Congress.

August 8th—Glasgow. Sail by the S. S. "Corsican" of the Allan Line. Single Cabin, $55 berth.

August 16th—Due in Montreal.

Cost, $295.00.

Optional Extension

August 9th—To Edinburgh.

August 10th—Edinburgh.

August 11th—Trossachs.

August 12th—Glasgow.

August 13th—Chester.

August 14th—Liverpool. Sail by S. S. "Winifredian" of the Leyland Line, $55 berth.

August 23rd—Due in Boston.

Price from New York, July 10th to Boston, August 23rd, $345.00.

For bookings and all information, address: Ralph E. Towle, Tour Manager, 31 Trinity Place, Boston, Mass.

BRYONIA VS. MORPHINE

(*Continued from page* 412)

In acute attacks of rheumatic fever and rheumatic arthritis, especially when the smaller joints are involved, this remedy is one of the most successful in the entire materia medica. It is especially valuable in articular rheumatism after the effusion has been absorbed to remove the soreness and stiffness which often remain as a most unpleasant sequel. In muscular rheumatism this drug is again quite uniformly successful, but should here be combined with cimicifuga and aconite to obtain the maximum therapeutic returns.

In acute inflammations of the glandular organs with throbbing pain, and marked local heat and tenderness, bryonia is a powerful aid in obtaining prompt relief and correction of the underlying pathological lesions. Especially is this true in inflammations of the mammary gland and the testicle. In mammitis where it is not desirable to check the secretion of milk, excellent results can be obtained from the use of bryonia in combination with aconite and Phytolacca decandra internally, accompanied by the local application of the last mentioned drug. In those cases where it is not essential that the milk secretion be preserved the efficiency of the combination can be materially enhanced by the local application of belladonna ointment.

In an acute orchitis with severe pain, such as is seen occasionally in boars following the injection of hog cholera serum, the condition can be relieved, and sterility in many cases prevented by the prompt administration of bryonia and aconite with Phytolacca internally and the external application of a strong solution of guaiacol.

The method by which this agent works is so much superior to that of morphine and the opiates, that there would seem little excuse for continuing the use of these pain *concealing* agents when more efficient antiphlogistic measures are at our command. There are occasional cases where pain is so severe as to make it necessary that some prompt relief be given. In these cases morphine is justifiable, but for real therapeutic value it cannot compare with bryonia and its congeners.

DOCTOR HUGHES TRANSFERRED TO FT. WORTH

I was ordered down here from Chicago on May 2nd by telegraphic instructions from the Quartermaster General of the Army to my officer in Chicago, Lieutenant Colonel A. D. Kniskern, acting Depot Quartermaster there. The direction was for me to proceed immediately to Fort Worth for temporary duty as Veterinary Inspector of Meats in the office of the Depot Quartermaster, Fort Worth, Tex. The Depot Quartermaster is Major Alexander M. Davis, of the Quartermaster Corps of the Army. My order reads that I am to return to Chicago at the expiration of this duty.

The opening of a depot at this point

is a new army move incident to the Mexican crisis, the object being to purchance subsistence supplies in enormous quantities at Fort Worth, especially fresh beef, for the field armies in eastern and northern Mexico in case of war, and for the militia and volunteer forces which will be probably mobilized in Texas at some points, possibly at Fort Worth, Dallas, Houston, San Antonio, or nearer the border. If hostilities break out it is expected that Fort Worth will be the big meat supply depot, as it is the largest packing house center nearest the border, and it is of the highest importance that that depot be established and thoroughly organized early. Consequently this office is engaged in gathering data on available stocks for immediate use, the maximum capacity of business houses here and in neighboring cities to meet the expected draft on them for subsistence supplies. Preparation is being made for possible exigencies so that the Quartermaster Corps may be ready to furnish supplies in enormous quantities and with the utmost speed in case of active warfare with Mexico. The army wants no repetition of that unpreparedness and the terrible losses which occurred at Chickamauga Park and elsewhere in the Spanish-American War.

D. Arthur Hughes.

Fort Worth, Tex.

EPHEMERAL LAMENESS IMPORTANT

The discussion of those peculiar cases of lameness in the horse, in which we are absolutely unable to find the cause even upon very careful examination, are of very great importance to the practitioners of veterinary medicine. These conditions often occur without any warning, or in many instances nothing unusual happens, to which we might attribute their cause. Their duration in a majority of cases is for only a few hours, and mystifies us as much by their disappearance, as by their appearance. It requires a great deal of tact and quite a lot of thinking many times in an effort to explain these conditions by comparing them with conditions that occur in the human family, and of which many of us have experienced just such conditions, we can usually make the average individual understand the probable cause of such conditions.

Very few people not thoroughly conversant with the anatomy of the horse's limb ever think of its tendons and ligaments. They do not stop to think how intricate and delicate many of the parts of the limb are, and how much risk the animal takes in its daily work. When we who know how great the dangers are in the average horse's daily work, to his locomotary apparatus, we think it truly wonderful that there are as few accidents as there are to our equine friend.

When we think of how many conditions might be caused by some sudden derangement of the circulatory apparatus, and the nerve supply of the limbs, it does not surprise us much that we often find these unexplainable and non-detectable conditions of lameness.

It seems to me that these conditions are the result of circulating disturbance, disturbance of the function of nervous system, an auto-intoxication or a toxic condition of the muscles themselves and sometimes by concussion.

There is probably not a reader of this article who has not experienced that sensation in some of the limbs (when we commonly say it has gone to sleep). All sensation is practically gone for the time being. How nearly impossible many times it is, to move this limb or bear weight upon it. This condition is caused by the arrest of the circulation or by the pressure of having the limbs in unnatural positions or holding heavy weights upon the limbs. It seems to me that the horse might be subject to just such a similar experience in its locomotary apparatus from different causes having a similar effect.

It is also possible to have an injury

to a joint of enough severity to cause quite a lot of pain but no swelling. (I have had just such an experience with my ankle-joint several times, it usually subsides in a day or so). This condition might be missed occasionally by a careless observer.

It seems to me that it would be very possible to have such an exertion upon a muscle or group of muscle cells, in doing hard work that the animal was not used to doing that the muscle or muscles would experience a temporary paralysis, simply be unable to alternately control and relax and thus carry on their function. It seems as if there were enough of the muscles so affected that it would produce all symptoms of a severe lameness; such a condition could scarcely be detected in any way, as the cause of inability of the muscles to contract and relax could not be seen by the eye, nor would they show any abnormality upon manipulation. (This many times happens to the practitioner's arm, who has a difficult case of parturition to handle, when the manipulations are taking quite a long time and the labor pains are strong.)

I can not see why there can not occur an auto-intoxication or a toxic condition in a group of muscles of some of the limbs as we usually have in groups of muscles. Nearly all veterinarians are agreed that azourila is caused by an auto-intoxication, and is usually associated with a well fed unexercised individual. It seems that we might get this local condition, and not the general systemic disturbance, from some cause or condition that occurs in the muscles themselves, from some local circulatory disturbance or disturbance of nervous function or of some chemical that may be produced by some of these conditions just named in sufficient quantities to cause this local disturbance.

These conditions are next to impossible as far as diagnosis and etiology is concerned and as far as treatment is concerned, anything outside of the rest treatment would be valueless and in fact superfluous. They are sudden in disappearance and many times as sudden in their disappearance, and as it is impossible to make a positive diagnosis, the best we can do is to use "our science of deduction" in an effort to master them.

G. H. Conn, D.V.M.
Prairie Depot, Ohio.

RECURRENT ORCHITIS

In the summer of 1912, I was called to the farm of a client who keeps several stallions. The patient to be treated was a fine Belgian stallion, weighing over a ton. On examination I found the sheath, scrotum, raphe, dartos, testicles and spermatic cords enlarged to nearly twice their normal size. On palpating the parts I found them quite solid and hardened. Pressure gave no evidence of tenderness, no heat was exhibited as in an inflammatory condition. The testicles were adherent to the dartos and that to the scrotum.

The patient's temperature was normal, pulse and respirations normal. Appetite good and general condition good.

On questioning the owner, I found a similar condition had existed the preceding summer, and that the scrotum and raphe had never quite regained their normal thickness, and that soon after starting the breeding season of 1912, the swelling returned. My diagnosis was chronic orchitis.

Treatment: Purgative of aloin. Potassium iodide 2 drams, three times a day for two weeks, discontinued for one week, and repeated for two weeks again. Dieted patient keeping him on laxative foods. Ordered lots of exercise. Advised client to take horse off of the stand. This he did for about one month.

At the end of two months, on above treatment the swellings had all disappeared from one side, and one testicle was free of adhesions. The raphe and scrotum on either side were still slightly thickened and one testicle still had adhesions to the dartos.

I again advised the client to take the horse from the stand and not use him any more that season, but as he was a great breeder and favorite among mare owners, he still used the horse. A month later the swellings again returned. Same treatment was used again with the same results, and condition remained improved throughout the winter, but soon after starting the season of the summer of 1913, the condition returned and persisted a great part of the season.

Under the same treatment during the fall and winter, the condition improved again, but has returned again with the opening of this year's breeding season.

Encephalic Fluid Absorbed.

Black and Tan toy puppy, male, age six weeks, suffering from hydrocephalus, cranium much enlarged, eyes badly swollen, and squinted; bowels irregular and constipated, occasionally. Treatment 1/164 grain of calomel and aromatics every fourth day; applied over external cranium every fifth day alcohol and glycerine of each two drams red iodide of mercury and potassium iodide of each eight grains.

The extracranial fluids seemingly were absorbed about end of ninth week, when the cranial walls suddenly collapsed. The patient became dull, ceased to feed and finally died. It appeared for some time that I had found a satisfactory line of treatment, but I was later disappointed, yet still believe this would prove satisfactory in an older patient and possibly in a larger animal.

James A. Waugh, *V. S., D. V. M.*
Pittsburgh, Pa.

The Last Word on Poultry Diseases.

Prof. Kaupp has a high standing in the medical world and is recognized as an authority on poultry diseases. His latest book, "Poultry Diseases" is certainly the *last word in print* on this subject. We quote a few paragraphs from the preface of the book: "This book is written to fill a demand from veterinary students, students in poultry husbandry courses at our agricultural colleges, for veterinary practitioners and for others interested in the scientific treatment of poultry diseases. An effort has been made to make the language so plain that all can comprehend the subject matter, which is a summary of the thoughts from experimental research in the laboratory of pathology of the author and of many other investigators. For the purpose of simplification, the synonyms are given for the various names of diseases. Then follow, in order, the cause, or causes, the symptoms, the conditions found upon post-mortem examination, and lastly the treatment for each disease."

The book contains 185 pages, 5x8 inches in size and is profusely illustrated with original half-tones and pen and ink engravings illustrating the many parasites, germs and bacteria that attack our domestic poultry. It is printed on a

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NORTH CAROLINA STATE BOARD EXAMINATION.

The examination for securing certificate to practice veterinary medicine in the state of North Carolina will be held in connection with the State Association meeting at Wilson, N. C., June 23, 1914.

G. A. Roberts,
Raleigh, N. C. Sec'y Vet. Exam. Board.

ILLINOIS MEETING MAY GO TO PEORIA.

Dr. A. T. Peters, who is superintendent and general manager of the Elmore Live Stock Company, Peoria, Illinois, has extended a cordial invitation to the Illinois Veterinary Medical Association to hold its summer meeting at Peoria and then taken an excursion to their feeding plant, where they have three thousand head of hogs, two thousand head of cattle, and a modern hog cholera serum plant in operation.

DR. W. S. CASS.

W. S. Cass, V. S., graduate of the Ontario Veterinary College in 1892, died in St. Louis, January 28, 1914, from apoplexy, at the age of fifty-five.

The doctor was formerly in the service of the B. A. I. at Chicago, St. Louis and Lincoln. At the time of his death he was engaged in general practice. Next to his love for surgery, the doctor's pet hobby was a balanced ration for horses. In support of his theories along this line he had manufactured considerable food and successfully placed it on the local market.

A widow and one daughter survive him.

A RECORD BREAKING SOUTHERN MEETING.

The Mississippi Veterinary Medical Association held a most successful and interesting meeting at Jackson, Miss., on May 11, 1914. Over forty members were present and twelve new members were admitted to the association.

The election of officers for the association for the coming year were as follows: J. A.

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Beavers, of Canton, president; W. L. Gates, of Clarkesdale, vice-president; J. D. Townsend, of Louisville, secretary and treasurer; John Oliver, W. R. Edwards and O. M. Norton, executive committee. Three members of the association were elected to the first State Veterinary Examining Board of Mississippi.

The newly elected Board of Veterinary Examiners met and elected O. M. Norton, of Greenville, as president; James Lewis, of Greenwood, vice-president; W. P. Ferguson, of Grenada, secretary and treasurer. A regular meeting of the board for the examination of candidates for the practice of veterinary medicine and dentistry will be held at Jackson, Miss., on June 19, 1914.

Greenville, Miss. O. M. Norton.

OMAHA JULY 6TH, 7TH AND 8TH.

The annual meeting of the Missouri Valley Veterinary Association will be held at Omaha, July 6, 7 and 8, 1914.

A number of papers and reports of cases will be needed to complete the program. There will be time enough for you to prepare one or the other for the meeting. Will You Do So?

A prompt answer will facilitate the issuing of programs.

Hal C. Simpson,
Secretary.

Denison, Ia.

ILLMO MEETING SOON AGAIN.

The Illmo Veterinary Medical Association will hold their mid-summer meeting July 17, 1914, at East St. Louis, Ill., National Stock Yards Hotel.

A special effort is being made to secure a good program. The replies received by the secretary from good men in the profession, who have been asked to contribute to the program, are very gratifying.

Collinsville, Ill. L. B. Michael, Sec'y.

FREE VETERINARY SCHOLARSHIP.

I have recently established a free scholarship at the Terre Haute Indiana Veterinary College, which is to be awarded as a prize to the man who presents the best essay upon some agricultural subject of general interest. The subject on which to write will be decided upon later and sent to those who make allication for entrance blanks to the contest.

Now as this contest is to be largely one for school children of the higher grades, averaging from 17 to 20 years in age, I would like to see this contest brought to the attention of the young men of the United States.

I will appreciate very much if you will run a short article in your next *Sunday Visitor* announcing the fact that I have established a free scholarship which is to be awarded as a

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prize in an open contest that is open to every young man in the United States and Canada over the age of 17 years. It is a rare opportunity to obtain a good start in a professional education at little or no expense. There are no disagreeable conditions attached to the contest, and the youths of America are especially invited to compete.—Dr. Charles F. Lynch, Terre Haute, Ind., in *Our Sunday Visitor*.

GLANDERS VACCINE NOT SATISFACTORY.

That glanders vaccine is not effective in rendering horses immune from this dangerous disease is the conclusion reached by specialists of the Bureau of Animal Industry as a result of extensive experiments with horses and other animals. The experiments show that while mallein is highly effective as a means to discover the presence of glanders in a horse, neither mallein nor glanders vaccine has shown any positive value in curing animals sick with glanders.

In the experiments 17 horses were used. These were stabled under such conditions that vaccinated and unvaccinated horses could be brought into contact with a good discharging case of glanders. Mallein and eye tests were used carefully to determine the results. The investigators report the following conclusions, which appear in a professional paper published by the department entitled "Immunization Tests with Glanders Vaccine":

The results obtained by these investigations appear to be sufficient to demonstrate the unsatisfactory results of this method of immunization. Of the 13 immunized animals, 9 contracted the disease from natural exposure, which is a large proportion when it is considered that all animals were aged and kept most of the time during the exposure out of doors. Of the 4 remaining immunized horses, 1 died of impaction after the second vaccination, while the other 3 animals were killed August 20, 1913, in order to ascertain by postmortem examination the possibility of glanders existing in these animals which had given positive serum reaction, but which had returned to normal. In artificial infections of the vaccinated animals they showed no resistance whatsoever, as both vaccinated horses promptly developed an acute form of the disease from touching the Schneiderian membrane with a platinum loop which had been touched to a growth of glanders bacilli. For the present, therefore, it seems advisable to abstain from immunizing horses by this method, as a practice of this kind may do more harm than good. Owners having horses which are supposedly immunized would naturally become careless, thinking their animals were resistant to the disease, and thus even a better opportunity would be offered for the propagation of the disease than if the horses were not vaccinated. Furthermore, the fact that the blood of vaccinated animals cannot be utilized for serum tests for two or three months after the injections is also a great disadvantage in the eradication of the disease.

As a result of this preliminary work, it appears that the control and eradication of glanders must still be dependent upon the concentration of our efforts in eliminating infected horses and the adoption of proper precautions against the introduction of infected animals into stables free from the disease. The results achieved in Germany, Austria, and Canada by these methods have proved very encouraging, and no doubt if executed in the same spirit in this country a marked reduction in the cases of glanders would result.

The Twentieth Century Farmer, Omaha Nebraska has conducted a strenuous campaign to force the State Live Stock Sanitary Board to appoint five special state agents for work on live stock diseases. It urges that veterinarians of long experience in practice be appointed for this work.

Death From Toxemia.

A spayed bitch, six years old, was brought me for treatment. The owner thought she had obstruction from eating rabbit fur. This animal was very fat; had no appetite; appeared dull; moved around but little: had no passages from bowels; temperature normal; tenderness in region of the abdomen upon palpation.

I administered cathartics and high injections of hot water and also of oil. The next day there was a slight increase in the temperature, but no bowel movement.

The patient was then suspended by hind legs and slow, deep rectal injection of hot water given. That afternoon she appeared brighter, but died in the evening.

Upon postmortem examination, I found the intestines entirely empty and normal with the exception of a sac on

the rectum about twelve inches from the anus. This sac was of about the size of hen's egg and opened into the rectum by a small aperature. It contained a black, putrid smelling substance. All the intestines smelled fishy and strong. There were no signs of peritonitis. Of what did this animal die?

Ouray, Colo. J. D. Paxton.

No Canine Race Suicide.

A dog census has just been taken in Paris, and, according to *The Collie Folio*, the Parisians are becoming progressively "doggier" in their tastes. "Perhaps it is the influence of the Entente Cordiale and the concomitant popularity of sport. When one makes 'le footing,' what more suitable pace-maker than a dog of some sort—the sort depending on the 'footster?' For such as are short of breath a poodle is indicated, for children a puppy, and for agile athletes a greyhound. Anyhow, there are two and a half times as many dogs in Paris today as thirty years ago. The figures are approximately 70,000 and 176,000. 'Chiens de luxe'—pet or toy dogs—are most numerous around the Bois and in the Etoile quarter, while the popular arrondissements keep watch dogs for use. Throughout the whole of France dogs are on the increase. Some 3,725,973 of them pay their taxes like good citizens—nearly a million and a half more than in 1872. The canine birthrate is thus eminently satisfactory, though it must be remembered that during that period there has been a constant stream of immigration, notably from England, Belgium. and Germany."—*Pacific Kennel Gazetter.*

Will you please give me information of the best horse insurance company operating in North Carolina. Ira W. Brown.

Atkinson, North Carolina.

DR. C. H. DOYLE.

Dr. Doyle is one of Harvey county's prominent democrats, who received his appointment March 26 as a member of the State Board of Veterinary Examiners. Dr. Doyle stands high in his profession, which is shown by the fact that he is authorized by the state to inspect live stock for interstate shipment and by the Bureau of Animal Industry to inspect live stock for Canadian exportation; an honor accorded to but five practitioners in the state. He has received many letters of commendation upon the correctness and business-like manner in which his certificates have been arranged. He is also a member of the Executive Committee of the State A. H. T. A., and a mighty fine fellow all around.—*The Newton* (Kan.) *Democrat.*

SYMPTOMS OF CANINE DISTEMPER.

In an ordinary attack of distemper, probably the first symptoms noticed by the ordinary observer would be a slight dullness, together with loss of appetite and a gummy appearance of the edges of the eyelids. At this stage there is seldom a discharge from the eyes. The eye is sensitive to light, the nose is often dry, and the inside edges of the nostrils show a gummy appearance without any actual discharge, which latter may appear at a later stage. The upper, large molar teeth become furred with a dirty brown substance which, unlike tartar, can be easily removed with the finger nail. The gums and insides of the cheeks are often inflamed. A soft, short, husky cough may be heard. In young puppies, pustules may be noticed on the abdomen and inside the thighs; they seldom show themselves in adult animals. The temperature, if taken in the first stages of the disease, is usually two or three degrees above normal (viz.: 101 degrees Fahr. taken per rectum). It is common to find a temperature of 103 or 104 degrees for the first forty-eight or fifty-six hours, falling after this to normal or only showing from half to one degree above normal, remaining in this condition for perhaps two or three days. When past the initial stage the more pronounced symptoms make their appearance according to the form which the disease assumes.

When the eye symptoms develop, which is not always the case, a thin, watery discharge is often noticed in addition to the gummy appearance of the edges of the eyelids. There is an increased sensitiveness to light, and the conjunctiva becomes increasingly inflamed, as does the mucous membrane lining the eyelids. The discharge alters in character, first becoming creamlike in color and consistency then getting slightly darker in color and of a very sticky nature, causing the eyelids to adhere to each other. At this stage the cornea will show a roughened surface (due to the presence of the pus and mucoid matter) which often becomes ulcerated; these ulcers may or may not perforate the corneal layer.

There is generally no appetite; and the animal is dull and sits on its haunches owing to the difficulty of breathing when lying down. If not arrested at this stage, pleurisy may follow, fluid forming in one or both

sides of the chest cavity, and death may follow from consolidation of the lungs.

The mouth is inflamed, the tongue being white and pasty or a dirty brown color, and the molar teeth show a dirty brown fur which, unlike tartar on the teeth, can be easily removed with the finger nail. A puppy having distemper during dentition and immediately before the permanent teeth are through nearly always shows a loss of enamel, in patches, on the second teeth, leaving the brown dentine exposed. This loss of enamel is the only proof, in later life, of a dog having had the disease. The gums also show special lesions in addition to their swollen and inflamed condition. They often bleed freely, and, if not kept scrupulously clean, will ulcerate and even slough away in large patches, leaving the roots of the teeth and parts of the jaw bones exposed. This condition renders eating very painful, and may cause the patient to refuse food. There is also a discharge of slimy matter from the mouth. Foul breath is present, owing to the condition of the mouth and stomach. Sickness arises in some cases, food being vomited almost as soon as administered.

Diarrhea is one of the most frequent symptoms and in some epidemics of distemper it is the only noticeable symptom when the temperature is not taken. In these epidemics, the diarrhea continues for a week or ten days before the true nature of the disease is recognized by the average dog owner, when further and better known symptoms arise. If the intestinal catarrh is serious the motions become very liquid and frequent; there is considerable straining, accompanied by pain and frequently resulting in dysentery. In bad cases large quantities of blood are passed, the anus being inflamed, sore and extremely sensitive. The motion may be odorless or very of-

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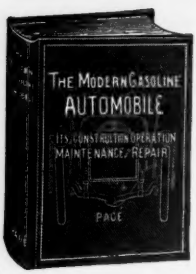

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American Journal of Veterinary Medicine, Evanston, Ill.

To handle more intelligently the work at hand, we will group, as is customary with writers upon veterinary medicine, the several varieties of true colic which it is our purpose to consider The classification that appeals most to the writer is a modification of those adopted in Hayes' translation of Friedberger and Fröhner's "Veterinary Pathology" and by Reeks in his excellent work upon "Colics of the Horse." Without attempting to adhere absolutely to the details in either instance but acknowledging the basis mentioned for the classification, we present the following groups, viz.:

1. Colic due to engorgement.
2. Colic due to intestinal and mesenteric obstruction.
3. Gaseous colic
4. Spasmodic colic
5. Verminous colic

Engorgement Colics

1.—Gastric Impaction.—We will first consider engorged stomach, called also stomach staggers, gastric impaction or vertigo. There is usually a history of gluttony; possibly the horse has slipped his halter or gained freedom through an open stable or stall door or from a pasture enclosure or otherwise and thus had access to some especially palatable growing food or the grain bin.

Having eaten to over-indulgence the animal appears especially dull, full-bodied and exhibits every evidence of reflex brain pressure, leans heavily against the wall of the stall or rests the head upon the edge of the manger. The pains are slow to set in, mild at first but gradually increase in intensity until they become a steady grind, but

Colic from Acute Gastritis

There is another form of indigestion, one which is met with very often, and one we all agree should be termed acute indigestion. It occurs when the horse is fed early before the usual hour and started as soon as he has eaten on a long drive, of say from twenty to forty miles.

Symptoms.—These cases begin with purging out, after being driven from seven to fifteen miles. As the animal is forced onward he shows little or no inconvenience while moving, or he may slack up in his gait, but not enough to be called really sick, but every half to one mile he will have a movement of the bowels, and at each time the discharge grows more watery or fluid. This will continue for several miles, when gradually it will cease and apparently he is over his trouble.

The difficulty, however, is not over, for when unhitched and led to water he will walk with his head down and with a slow, shambling gait. He refuses to drink or eat; stands resting on one or the other of the hind feet, head hanging down; at intervals the head will be raised and the nose pointed outwards. As soon as these movements are gone through with the head will be drooped again and a change of position of the hind legs will take place, shifting from one to the other.

Soon he will paw a little with one front foot and then with the other; instead of raising and lowering the head, he will now look around towards his sides and you will note that the nostrils are more widely open than normal and the breathing is just a trifle faster than it should be.

As time goes on he will get more uneasy and threaten

to the nature of causative condition and then all of these years we should have been treating causes instead of eternally seeking medicament to cure the effect.

Colic in animals has usually been considered as a mild, or overwhelming abdominal pain, as the case may be, and too little attention has been paid to the underlying cause. Our weakest point in the management of colics is our inability to diagnose the cause of, and the seat of the ailment, at a stage early enough to put direct, effectual treatment into operation before it is too late.

The conventional treatment of almost all colics is the administration of a pain-relieving potion, and then, if this is not followed by a cessation of the pain, an evacuant is thought necessary. When these two fail the patient dies. The painkillers are usually morphine, cannabis indica or chloral and the evacuant anything from a hypodermic injection of violent eserine, arecoline or pilocarpine to a large drench of linseed or castor oil.

In addition to the foregoing, when there is bloating, carminatives and antiferments are given and if the bloat is threatening a trocar and canula are thrust into the right flank. This, with a few variations in the selection of drugs, constitutes, with most of us, the standard treatment of colics today, and these treatments are so strictly conventional that almost anyone of ordinary intelligence can master the entire system after a few days of instruction. In fact, we all know of "handy" fellows in veterinary hospitals and large stables who manage colics quite up to the prevailing standards.

This is not as it should be in this day of sane therapeutics. We should accept now the burden of studying

punctures and stomach cathetrization in many instances to determine more accurately the nature of alimentary disorders of an acute character.

This paper is not designed to be a discourse on diagnosis, but I can not very well introduce my subject logically without first showing the possibility of locating the seat and cause of abdominal pain with a degree of accuracy that would warrant the recommendation of treatment by instrumentation. A surgical operation is justified only when directed at a definite object and when this object cannot be located accurately then the surgeon must leave the condition in the therapeutist's category. On this account the following remarks deal at some length with the diagnosis of the condition the operation is intended to cure.

ACUTE PAINFUL DISEASES OF THE STOMACH

The stomach of animals is subject to the following disorders which cause acute pain:

1. Overloading of the stomach of work horses. In this country almost universally called "acute indigestion."
2. Impaction of the stomach.
3. Acute gastritis.
4. Acute dilatation of the stomach.

It will be noticed here that without going beyond the stomach we already find four definite disorders, each of which I shall endeavor to show belongs to the list of surgical diseases. Some of them may yield to medical treatment and when of a mild type may still properly remain in the list of medical diseases, but when they are grave, the aid of the surgeon must be enlisted or the patient will not survive. Let us analyze them separately.

Four sample pages (much reduced) from "Colics and Their Treatment," published by the American Journal of Veterinary Medicine, Evanston, Ill. Cloth bound, 137 pages, price $1.25 prepaid.

removal when the tube has reached the stomach and placing it so that its end is one inch from the end of the tube are both essential preparatory measures.

The patient, everything being ready, is backed into a single stall and tied loosely to the pillar rein, preferably with a good strong dental halter Cases in the throes of violent pains should be tied carefully to provide against injury in case of sudden decumbency The left nostril is usually chosen The tube is lubricated with a soft vaseline, but the entire length should not be lubricated at once, as it may become soiled by litter adhering to it during the first maneuvers of the operation. It is best to lubricate only about eighteen inches and then apply vaseline to the remainder as fast as it enters the nostril. In this manner the tube is kept free from any grit, litter, earth or any other loose objects over which it is certain to be trailed.

The end of the tube is held in the right hand, which now directs it along the floor of the nasal fossa by a firm pressure, as the left hand slowly pushes it backward. When buried ten inches the head should be extended to bring the channel through which the tube must pass nearer to a straight line. The tube may now be taken in both hands and pushed right down without further hesitation, except to lubricate it with vaseline as fast as it enters.

The timid, unskilled operator may stop momentarily after three feet of the tube has entered to palpate the neck to assure himself it has not passed into the trachea, an accident that very seldom, if ever, occurs, when a stylet is used. With the limber rubber tube passed with-

Intestinal Flatulence

Enterocentesis should be resorted to in this ailment if danger is imminent. The indications call for the quick purgatives (eserine or arecoline) and the following

℞—Ol. Menthæ piperitæ.....ʒij
Ol. Terebinthinæ.
Ætheris.
Spts. Ammon. Arom.
Tr. Zingiberis ....aa ʒij
Ac. Salicylici ....ʒvj
M.*

Sig. Give one-half at a dose in a pint of water, repeat in three-quarters of an hour if necessary.

Avoid anodynes.

This form of colic is frequently followed by impaction due to the exhaustion of the muscular coats of the bowels, resulting from the stretching they have been subjected to during the flatulence. Eserine sulphate is doubly valuable in this instance, to eliminate the fermenting material and to stimulate secretion and peristalsis and the exhausted muscular coats through their nerves thus warding off impaction.

Making it an almost invariable rule to use eserine, or possibly arecoline, in these cases will well repay the practitioner by saving him the worry and danger incidental to impaction of the bowels.

Naphthalin is a useful intestinal antiseptic and antiferment in two to three-dram doses. Autointoxication

*Note: Dissolve the salicylic acid in the tincture of ginger to prevent a too violent chemical reaction between it and the aromatic spirits of ammonia.

primary disease and if the case comes into my hands still showing slight peristalsis, the following is administered:

℞—Physostigmine sulphate .....gr. jss
Pilocarpine hydrochloride .....gr. ij
Strychnine sulphate .....gr. j
Distilled water .....q. s. ʒiij
M. et fiat sol.

Sig. Administer one dram (or one-third of the solution) every twenty minutes until all is used.

This commonly is all that is necessary, except perhaps a quart of raw linseed oil is sometimes beneficial. Should it fail, or if the impaction is fully established, the following is administered:

℞—Fluidextracti Nucis Vomicae.....ʒj
Fluidextracti Pilocarpi .....ʒij
Fluidextracti Colchici sem.....ʒss-j
Fluidextracti Physostigmatis .....ʒj
Aquae q. s. ad.....ʒviij
M.

Sig. Give one ounce every one and one-half to two hours, diluted with an ounce or two of water.

If there is considerable pain, one-half dram doses of fluidextract of belladonna may be added. This drug also stimulates intestinal secretion after a brief diminution; or instead of the repeated one-half-dram doses of belladonna, a single two-dram dose may be given and repeated in three or four hours if necessary.

Should there be considerable congestion of the

possible to get sufficient warm water for the purpose, but prefer warm water, inasmuch as I have seen several severe chills brought on by the cold injection, and I have not seen it produce any better results than warm water.

While I admit, and advocate the value of liberal rectal injections, I do not, by any means, use them in all cases as I find the internal treatment, with the liberal use of oil usually, saves me the trouble of the rectal injections.

Superpurgation

Give starch or flour gruel to drink instead of water. A hypodermatic injection of morphine sulphate may be of value for immediate and temporary action. Give the following also:

℞—Ac. Hydrocyanici Dil.
Chloroformi
Ol. Menthæ Piperitæ . . aa ʒss
Ol. Terebinthinæ Rectif. .. ... ʒjss
Tr. Capsici.
Spts. Camphoræ.
Tr. Opii ....aa ʒiij
M.

Sig. Give two ounces in one-half to one pint starch or flour gruel, every two or three hours. (Less often as improvement is shown.)

Enteritis

There is no doubt that true enteritis envolving a considerable portion of the intestines is invariably fatal, but I am of the opinion that where it exists only in a small localized area that recovery may occur.

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and their
Treatment

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Springtime Surgery contains reprints of the best articles published in VETERINARY MEDICINE on the surgical operations and obstetric problems most common at the castrating and foaling season—the very cream of veterinary literature on these subjects. For the practicing veterinarian, these discussions constitute a valuable supplement to the standard text-books of veterinary surgery and obstetrics—articles too valuable to be left in the more or less obscure files of any magazine.

No practitioner would be without this book if he realized its value. There is no other text or description equally good on the subject of Cryptorchid Castration.

CONTENTS:

Castration of Cryptorchids, by W. L. Williams, Professor of Surgery and Obstetrics in the New York Veterinary College, Cornell University, Ithaca. This article gives in minutest detail the occurrence, cause and diagnosis of cryptorchidism, the preparation of the patient for operation, the incision, location of the internal ring, securing the testicle and after treatment. Inguinal cryptorchidism, double cryptorchidism, pathologic testicles and laparotomy are also discussed, together with a summary of mortality statistics and the sources of infection.

Practical Methods of Cryptorchidectomy, by Chas. Frazier, B. Sc., M. D. V., Dean of the McKillip Veterinary College, Chicago. This article discusses preparation of the patient, rectal examination, disinfection, equipment, casting, plan of procedure, cleansing the field of operation, the incision, traversing the inguinal canal, locating the internal inguinal ring, opening the peritoneal cavity, locating the testicle, removal of the testicle, complications, laparotomy, wound treatment, accidents subsequent to operation and after-care.

Cryptorchidectomy in Horses, by C. E. Steel, D. V. S., practitioner, Oklahoma City, Oklahoma. Doctor Steel has for a number of years castrated cryptorchid horses for other veterinarians with remarkable success. His experience embraces hundreds of cases. He tells in this article just how he performs the operation and to what he attributes his success.

Castration in Complicated Cases. Under this head a number of unusual cases are discussed by various writers. They include a discussion of errors in castration, monorchids, hemorrhage following castration, castration in cases of scrotal hernia and in cases of hermaphroditism.

Spaying. No attention is given to oorphorectomy in dogs as veterinarians ordinarily find no difficulty in this operation. The spaying of heifers as it is done on the western ranges is very fully discussed as is also the spaying of cats, an operation that in the hands of some is attended by a high mortality.

Obstetrics. Prolapsus uteri and its successful treatment is discussed by two writers, different methods, applicable under different conditions, being described. An interesting discussion on superfetation is also given.

Diseases of the Newborn. C. L. Wilhite, D. V. S., of Iowa, discusses his method of bringing about the closing of the *Persistant Urachus.* This method has been favorably commented upon by a large number of practising veterinarians. The *Care of the Navel of the Newborn* is fully discussed by W. L. Williams, Professor of Obstetrics in the New York Veterinary College. Doctor Williams shows that navel hemorrhage is not serious and in nearly every case will stop spontaneously. He calls brief attention to the source of infection and emphasizes the uselessness and even harmfulness of ligation of the umbilical cord. He describes fully a method for the prevention of infection that has been used with entire success. *Atresia Ani* is interestingly discussed by A. T. Kinsley, D. V. S., of Kansas City. A very practical article is one by James Smellie, M. D. C., on the *Treatment of Contracted Tendons in Foals.* Doctor Smellie has practiced for more than twenty years in one of the best breeding districts in Illinois, and from his experience has evolved a method of treating these troublesome conditions that is probably superior to any other.

Minor Means of Restraint. Under this head methods are briefly given to handle the hind feet of an unbroken horse; to pass the Knisely Stomach Tube; restraint for cattle; to control cattle in a standing position; to break a horse from pulling back.

Surgery of the Hand. Not the least valuable article in this book is one by Ralph St. J. Perry, M. D., on the treatment of the injured hand. The loss of time to veterinarians from infected wounds on the hands in the aggregate is something enormous, and not a few have lost a hand or an arm, and a considerable number their lives, as a result of such infection. In this article Doctor Perry gives in great detail the method of treating infected wounds of the hand that he has found successful in the treatment of thousands of cases which occurred in his practice as physician to one of the largest industrial corporations in the United States.

The first edition (2,000 copies) was sold out within 30 days from the time it was received from the printer, and the second edition was exhausted in less than a year. This breaks all records for the sale of veterinary books and is evidence of the worth of the book. The purchase price ($1.00 for the cloth or $1.50 for the half-leather edition), will be refunded to any purchaser who finds the book unsatisfactory and will return it.

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American Journal of Veterinary Medicine, Evanston, Ill.

fensive, the latter condition being pronounced when the disease approximates to the typhoid or enteric form.

Paralysis affecting the front limbs is usually of a more serious nature than that affecting the hind. Partial or complete paralysis of the bladder often accompanies loss of power in the hind limbs; and in some cases the lower bowel is affected, rendering the patient unable to pass a motion.

Convulsions appear in many forms. In mild cases the lips may be elevated and twitch. A very slight chattering of the teeth may be noticed without foaming at the mouth. The body may or may not be convulsed in these attacks. There is no loss of consciousness. In other cases the fit is much more pronounced. There is champing of the jaws, foaming at the mouth, great excitement and screaming. The animal may make wild rushes if not held under control, followed by convulsions of the body and limbs, then loss of consciousness and rigidity of the muscles. The bladder and lower bowel are emptied involuntarily. The fit may last a very short time, the animal looking up in a wondering stare, or the state of coma may continue for a considerable time. If convulsions recur frequently and continue for any length of time the consequences are generally serious; and when recovery takes place its progress is very much retarded. The same may be said in regard to chorea. When the animal recovers from distemper the chorea remains permanent, although in course of time there is generally a slight amelioration.—*Field and Fancy.*

LAST WORD ON POULTRY DISEASES

Prof. Kaupp has a high standing in the medical world and is recognized as an authority on poultry diseases. His latest book, "Poultry Diseases" is certainly the *last word in print* on this subject. We quote a few paragraphs from the preface of the book: "This book is written to fill a demand from veterinary students, students in poultry husbandry courses at our agricultural colleges, for veterinary practitioners and for others interested in the scientific treatment of poultry diseases. An effort has been made to make the language so plain that all can comprehend the subject matter, which is a summary of the thoughts from experimental research in the laboratory of pathology of the author and of many other investigators. For the purpose of simplification, the synonyms are given for the various names of diseases. Then follow, in order, the cause, or causes, the symptoms, the conditions found upon post-mortem examination, and lastly the treatment for each disease."

The book contains 185 pages, 5x8 inches in size and is profusely illustrated with original half-tones and pen and ink engravings illustrating the many parasites, germs and bacteria that attack our domestic poultry. It is printed on a high-grade super-calendared book paper, substantially bound in cloth, linen sewed to make it flat-opening and the title stamped in gold.—From a review in the *American Poultry Journal,* Chicago.

REMOVE HORSE APPENDIX.

Surgeons in the veterinary department of the University of Pennsylvania recently performed an operation for appendicitis upon a valuable horse owned by A. Reeder Crambers, of this city, and the animal is now here as well as ever. The horse is said to be the first to have an operation performed upon it.

The animal was taken to Philadelphia and brought back again by boat. Mr. Reeder was so fond of it that he obtained the best medical skill possible to try to save its life after it had been treated by Trenton veterinarians.—*Trenton Newspaper Clipping.*

100,000 TAUGHT PROFESSIONS

There are 100,000 students enrolled in professional schools in the United States this year, according to the federal bureau of education to-day. Of these 85,102 are in endowed institutions; the rest in those supported from public funds.

Nurse training is the profession which has the largest number of students, 34,417 taking such courses. Law comes next with 20,878; and then follow medicine with 17,238; theology with 10,965; dentistry, 8,015; pharmacy, 6,165, and veterinary science, 2,324.

New York has the greatest number of students in professional schools, with Illinois second and Pennsylvania, Massachusetts and Missouri following in the order named.

DEPILATORY

A good depilatory is a mixture of 1 dram each of starch and barium sulphide and ½ dram of zinc oxide. Mix with a little water in a watch glass, and apply to the part to be denuded. Remove after two minutes, when the hair will usually have disappeared.

John D. Rockefeller has given a million dollars for a study of animal diseases and J. J. Hill has given $50,000 to be used exclusively for the study of hog cholera. This money will be handled by the Rockefeller Institute which has done so much to advance the science of human medicine. Bovine tuberculosis is one of the diseases that will be given especial attention. From the fact that tuberculosis and hog cholera cause

enormous losses to the farmers of this country it is evident that every one engaged in live stock raising will welcome this act of generosity on the part of two of our prominent capitalists and follow with interest the results secured.

AFTER A YEAR

A year ago one Goddard of Boylston, Massachusetts, took a horse belonging to his employer and driving him into the woods hitched him and left him. Four days later the poor horse was found down, exhausted and nearly dead. He had eaten the bark from the tree and gnawed away even the wood of the tree. By the best of care he was restored to health. The man Goddard disappeared. Our agent, Robert Dyson of Worcester, always had an eye open for him. The last of January Mr. Dyson spied him on the street. The man started to run but was overtaken and arrested and tried. He will serve three months in jail.—*Our Dumb Animals.*

CHANGES OF ADDRESS.

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NONPAYMENT OF DEBTS BY EMPLOYEES OF THE U. S., B. A. I.

A recent order of the Acting Secretary of Agriculture provides that, although the department will not permit itself to be used as a collection agency, it will not consider as a fit employee any one who contracts a just debt and then without sufficient excuse neglects to make payment. Therefore, upon receipt of a complaint of nonpayment of debt the bureau will obtain a report in writing from the employee concerned, which, together with a summary of the conclusions reached by the department in the matter, will be made a part of the official record in his case and considered by the committee on efficiency and promotions in making up the efficiency register. Charges may be preferred against an employee who contracts a just debt and then without sufficient or reasonable excuse neglects or avoids payment thereof, directing him to show cause why he should not be dismissed from the service of the department.—*Service and Regulatory Announcements.*

VETERINARY CONGRESS IN LONDON

London, April 25.—The Tenth International Veterinary congress will be held in London from Aug. 3 to 8, inclusive, and extensive arrangements are being made for the entertainment of the American delegation, which will come under governmental auspices. Before the congress meets the American delegates, in charge of Dr. Adolph Eichhome of the United States department of agriculture will make a tour of Europe to study abattoirs and veterinary colleges.—*The* (London) *Times.*

A NEW WORLD'S RECORD FOR BUTTERFAT PRODUCTION

The Guernsey cow, May Rilma, has just completed her yearly test for butter-fat production. This cow has made 1,059.59 pounds of butter-fat in 365 days. To do this she gave 19,639.50 pounds of milk and is still producing, having produced more the 13th month than she did during the first month of the test.

Up to this time the largest butter-fat record of any breed was held by the Holstein cow, Banostine Belle De Kol, and the amount was 1,058.34 pounds. The next largest Guernsey record was made by Spottswood Daisy Pearl and was 957.38 pounds. The largest record for a Jersey cow is held by Sophie 19th of Hood Farm and is 999 pounds 2.2 ounces of butter-fat. The largest Ayrshire record is held by Auchenbrain Brown Kate 4th with a record of 917.60 pounds of fat.

These are the great yearly butter-fat rec-

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ords of all of the dairy breeds. It is a distinct honor for a Guernsey cow to supplant the record that Banostine Belle has held for about three years, and she was the first cow to surpass Colantha 4th Johanna, who made her record about seven years ago. The Guernsey cow has beaten the highest figure by 1.25 pounds. It shows that the dairy breeds are progressing, that the work of record making in the dairy industry is still advancing not in any sensational degree, but in a way that is indicative of the greatest and healthiest growth.

It is a pleasure to honor May Rilma in her success and much credit is due to the owner and to the men who carried her through the test.—*Kimball's Dairy Farmer.*

CHANGES OF OFFICIALS IN CHARGE U. S. B. A. I.

Adel, Iowa, Dr. J. S. Koen instead of Dr. O. B. Hess.

Chicago, Ill., Dr. W. N. Neil instead of Dr. S. E. Bennett.

Crawfordsville, Ind., Dr. S. E. Bennett instead of Dr. U. G. Houck.

Denver, Colo., Dr. J. C. Exline instead of Dr. Herman Busman.

Fort Collins, Colo., Mr. W. P. Little instead of Mr. John O. Williams.

South Omaha, Nebr., Dr. Herman Busman instead of Dr. W. N. Neil.

Spokane, Wash., Dr. C. M. McFarland instead of Dr. J. C. Exline.

Watertown, S. Dak., Dr. R. G. Rice instead of Dr. W. A. Lyons.

—*Service and Regulatory Announcements.*

GUARDING THE MILK SUPPLY

Before people congregated in vast numbers in cities each householder was able to exercise some measure of supervision over the supply of milk delivered at his door. He dealt direct with the producer and he could hold the latter responsible for failure to bring in pure milk from the country.

Since population became congested keeping the milk supply clean has grown into a complicated problem. The producer sells milk to a distributer, who ships it to the city, where it is delivered. Sometimes the milk passes through the hands of two or three other agents before it reaches the consumer. The result is that the production and distribution of milk, one of the most universally used and one of the most important of foods, must be carefully regulated through some central authority—usually the city health department or the state board of health, or both.

Chicago's health department during the last

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two years has done effective work in this respect, under the ordinance passed in August, 1912. The department is therefore justified in congratulating itself and the people of the city because the Illinois Supreme court has now upheld this ordinance. By this decision the department's right to compel recording thermometers on all pasteurizing machines is strongly maintained. The court likewise distinctly specifies the "imperative duty" of regulating "in minute detail" the milk supply "through all the processes of transportation, preservation and delivery to the consumer."

Since purity of the milk supply and the health of the community are so closely related it is essential that the production and distribution of milk shall be closely supervised. The decision of the Supreme court dealing with this subject is of great value to the public.—*Chicago Daily News.*

WHY EXPERIMENT STATION WORKERS COMMIT SUICIDE.

Dr. M. Ray Powers,
Clemson College, S. C.

Congress has ritten me 2 letters asking me to rite to you conserning hog colery I no what cures colery I have none it for maney years I never node the remedy to fale thoe some others seems to no 8 am olde you Perhaps Better take some young mans advice that Probably never saw a hog the time has come that a poor mans weard is not noticed Mr Powers it is not wearth while to Be very long finding curefor hog colery I dont perpose selling the cure if it dont cure if it was possible I would like for you to see me cure a hog It is very simple cure if the hog is too fair gone death is his Portion I can Pick up a hog and tell whether the colery is coming on him or not I have handled hogs all my life I never lost a hog Would like the Wearld Wide node the cure I will have to Pay for the cure

yours as ever (signed) P. B. Tinsley
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Clemson College, S. C.,
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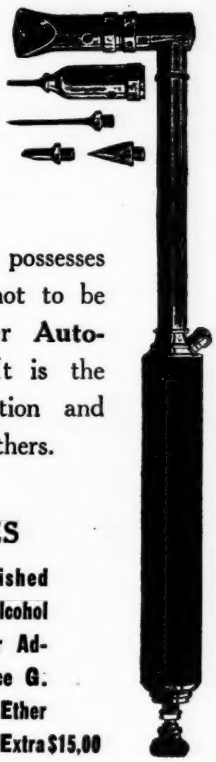

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Thanking you, I remain,
D. J. Holton, V. S.,
Waseca, Minn.

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Mr. Powers your letter to hand I suppose you would like to give my remedy a tryel on some hogs then you would know as much about colara as I doo Doo you suppose the government wants me to give the remedy they is nothing said about paying for the remedy if the remedy was no good I would give it to you I am in the last stage of pellagra cant live long Mr. Powers if you ever ame to get the cure from me now is the time Mr Powers I will Be Plain With you if the remedy dont prove as I say I dont want aney Pay But the money must Be Where I can Put my hand on it When the test is made for I do no it will cure if used in time I have node this cure since I was a boy I supose they have bin maney cures sent to you Mr Powers I saw in the Paper the government would give fine Price for a cure for horses they was all dying I did not no the disease By the name I can cure horses Blinde Stagers Gravel Belast or Wind Broken rubing the tale ring bone etc. Mr. Powers if I live I am going to Greenville april 20 or 25 that is my home Staying hear With my childern the Winter Mr Powers havent you tride colara with sompting you aught to try severl remedies you mite ketch mine if you want colara cure get it While I am living I guarantee the cure no cureno pay you had Better round this thing up soon rite me What you think and what you will doo

I am yours as ever
(signed) P. B. Tinsley

No. 39 Bleake St
Charleston, S C
March 24, 1914.

Dr. M Ray Powers
Clemson College, S C

dear Sir I am in Greenville at Presant I havent invented a cure for hog collara I have node it all my life I saw my father cure hogs When I was a boy they is But one way to cure hog collara I never node it to fale I no it will cure I have tride it and saw it used and never fails I supose you have got maney letters that so & so had dis-

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Anti-Fis-Tract is a safe and efficient treatment for the cure of Fistulous-withers, pollevil quittor, shoe-boil, deep humeral abscess, actinomycosis and all kindred conditions. It will remove the tract or pipe from any fistulous tract or abscess, leaving a clean, healthy sinus that will heal in a short time, having good drainage. It gives the animal no pain or inconvenience and makes almost a bloodless operation. It is now being used by veterinarians in every state and all report results O. K.

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I. G. WIMSETT, Veterinarian, WINFIELD, KAS.

covered cure for cholera it Want cure they is But one way to cure a hog for aneything you cure a hog from the outside Mr Powers you may think I am talking threw my hat But When you give it a test When you give it a fair test you Will alwais Beleave me It cost nothing to cure hogs It is very simple I was suprised When I saw in the Paper that congress wanted a cure for collara the hog was put here to take the Woods for a living When I send you the cure you Will Beleave it Will cure Before you trye it it will not doo to lye nor steel or defrode aney man the trooth Will Bair agoo face When I send the cure to you dont send a fool to doo your weark Mr Powers ask congress tomorrow about What they think the government Would give for a pumberment cure for hog collara to spread the wearlde Wide then every man can cure his hogs they was man on the out skirts of Charleston had fine lot of fine hogs I was pasing the lot they was 2 dead I say What you drinching your hogs with he sed Whiskey carsene cold tair They was 5 dead that day I tole him I could cure his hogs he was full of Whiskey he sed let them go to h. I plade Shet mouth if a man thinks he no more about What I say he can goe Mr Powers you will think I have sed very mutch I am not half done telling you if I was with you I could tell

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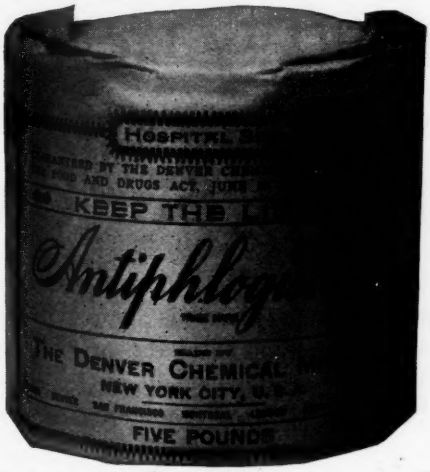

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NEW YORK

you mutch But you take it for granted this is the truth so help me god Mr Powers ask Congress What they think ask them at onst I think you must Be Pade for your trouble I must Be Pade for the cure and trouble I will say no more at Present you rite me soon as you hear from congress if you Want the cure I would Be glad to hear from you at onst

respectfully yours
(signed) P. B. Tinsley

No. 137 Cleven St
Greenville, S C
April 30, 1914

Mr M Ray Powers
Clempson College S C

Dear Sir Will send you the cure for hog colera I must leave Greenville soon so I have dissided to not Wate to hear from you I make my sun a present of What I get out of the government for the cure of hog colera I take you as anonest man I Will rite him tell him When the government Satisfys you you Will send him What money is comeing to me for the cure his name is Frank Tinsley

No. 175 Spring St
Charleston, S C
oblige

Mr Powers tell you how have the hog on drye lot no his legs are drye look at the front legs they is 4 or 5 little holes on Bothe legs on the inside of the leg look cerfuley if them holes are drye you may no hog is sick if the holes are damp let the hog alone hog never gets sick While they are damp if they are drye dig short trinch lay hog on his Back hold him study take con cob rub them little holes until they Bleede little take your finger nale clean the holes good Wet the legs with turpentine turn the hog luce he will soon eat harty and groe fat read this letter over & over dont forget What I say Mr Powers if hog has Blinde Stagers it will kill hog at onst cure the hog take half Pinte corn Whiskey 25c quinnine mix it

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Well hold hog study fill his ears with the mixtry hold his ears and head study 25 minutes hog Well at onst
P. S. answer my letter let me hear What you think of the hog remedy I tole you it was simple I may stay hear severl days When you give this cure a test ask the government to Pay Fair Price for it Publish it the Wearld Wide then every man can cure his hogs tell the government to say hoo they got the cure from & What county it is Big thing to no how where & Whin Mr Powers rite me at onst dont be Backward say aneything to me ask me aney question you Wish

yours as ever
(signed) P. B. Tinsley

excuse Bade riting and Bade spelling no Scholler
No. 137 Cleveland St
Greenville, S C
May 1, 1914

A SOUTHERN VETERINARY MEETING.

The seventh annual meeting of the Alabama Veterinary Medical Association was held March 5, 6 and 7 at Auburn, Alabama, in the College of Veterinary Medicine of the Alabama Polytechnic Institute. Dr. O. R. Eatman as President of the Association made a strong plea for the Veterinarians to work for an efficient Veterinary practice law in the State—the primary object of which is to better control the practice of Veterinary medicine, so that all the illegal and improper methods will be eliminated.

How to Prevent The Spread of Disease In the Shipment Of Horses and Mules was the subject of a paper by Dr. J. S. Andrade. He considered that three points were essential: 1. Efficient inspection, 2. Thorough disinfection of the sales stables. 3. Thorough disinfection of stock cars. Along this same line Dr. Bahnsen discussed the value of inspection of horses and mules for inter-state shipment. He argued that in many cases the inspection was a farce because the inspectors failed to do their duties. These papers were discussed by Drs. White, Jolly, Douglas, Roberts, and Cary. Dr. Jolly stated that he considered the inspection of value and it could be made more valuable by more thorough and closer inspection. Dr. White argued that a large number of the inspections were properly done and were consequently of great value in preventing the spreading of glanders and other infectious diseases.

Messrs. Jones and Smith, Senior Veterinary Students, read a paper and gave an anatomical demonstration on The Relation of the Facial Sinuses in some Surgical Operations. One of the chief points brought

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FOUR SAMPLE PAGES (REDUCED) FROM "POULTRY DISEASES AND THEIR TREATMENT."

spread disease anew among the flock, thus undoing the whole of the disinfection.

Disinfection of Buildings.—The first operation in disinfecting a poultry house, therefore, is the thorough removal of all manure, trash and litter. If the roosts and nests are removed from the building, they must be cleaned and disinfected before they are returned; if left in the building during the disinfection, they must be as thoroughly cleaned as the remainder of the building, and the disinfectant used must be applied to them as carefully as to other parts of the building.

The floor and roosts should next be scraped, and they and the walls and ceiling carefully and vigorously swept. All parts of the interior of the building must then be thoroughly scrubbed with water, to which lye has been added, and a broom or stiff brush and then flushed out, using plenty of water. The building is then ready for the use of the disinfectant.

There are three different classes of agents that may be successfully used in disinfection. The disinfectant may be applied in gaseous form, as a liquid, or heat may be utilized.

A gas may be used in disinfecting only when the building can be closed tightly enough to prevent its ready escape. This excludes the great majority of poultry houses; but in such as it can be employed, all doors, windows and other openings must be tightly closed and kept closed for several hours. After disinfecting a building with gas the interior should be whitewashed, as directed under the use of liquid disinfectants.

Of the gases that may be used, only three need to be considered here—hydrocyanic acid, formaldehyde and sulphur dioxide.

When the treatment of individual birds for lice becomes necessary some kind of powder dusted into the feathers thoroughly, seems to be, on the whole, the most effective and advisable remedy. The powder used must be of such a nature, however, that it will be effective. There are so-called "lice powders" on the market which are no more effective than an equal quantity of any inert powdered substance would be. It is not only a waste of money but of time as well to use such powders. At the Maine Station no lice powder has been found that is so satisfactory as that originally invented by Mr. R. C. Lawry, formerly of the poultry department of Cornell University. This powder (which can be made at a cost of five cents per pound) is described as follows by the Maine Station:

In using any kind of lice powder on poultry, it should always be remembered that a single application of it is not sufficient. When there are lice present on a bird there are always unhatched eggs of lice (nits) present, too. The proper procedure is to follow up a first application of powder with a second at an interval of four days to a week. If the birds are badly infested at the beginning, it may be necessary to make still a third application.

The lice powder which the Station uses is made at a cost of only a few cents a pound, in the following way:

Three parts of gasoline and one part of crude carbolic acid, 90-95 per cent strength, or, if the 90-95 per cent strength crude carbolic acid cannot be obtained, take three parts of gasoline and one part of cresol.

Mix these together and add gradually, with stirring, enough plaster of paris to take up all the moisture. As a general rule it will take about four quarts of plaster of paris to one quart of the liquid. The exact amount, however, must be determined by the condition of the powder in each case. The liquid and dry plaster should be thoroughly mixed and stirred so that the liquid will be uniformly distributed through the mass of plaster. When enough plaster has been added the resulting mixture should be a dry, pinkish-brown powder having a fairly strong carbolic odor and a rather less pronounced gasoline odor. Do not use more plaster in mixing than is necessary to blot up the liquid.

This powder is to be worked into the feathers of the birds

of blood cells. One of these, a white-blood cell (phagocyte), has taken up one of the germs.

Mode of Spread.—Birds often contract this disease from others at shows, and when taken back home infest the remainder of the flock and the premises, or a bird recently purchased from an infected flock, or eggs from an infected flock, or chicks recently hatched in infected surroundings, or infected droppings carried on the feet of men and animals, from henhouses where the disease exists, or carried by streams or irrigation ditch water, dried and carried by the wind as dust, or carried by wild birds, may be the means of introducing this disease among healthy birds. Even insects have been known to carry the contagion. Buzzards are common carriers of this disease.

FIG. 26. BLOOD SMEAR FROM CASE OF CHOLERA

Showing red blood cells, thrombocytes, mononuclear leucocytes, polymorphonuclear neutrophiles and many of the polar staining germs (*Bacillus avisepticus*) of the disease.

The germ of fowl cholera retains its power to produce disease for weeks, and even months, about premises where it has occurred, unless they be thoroughly disinfected. The germs have been kept in test tubes, experimentally, for two years and still proved to be virulent, that is, still capable of producing disease. It resists, for a long time, both drying and zero weather.

Cholera may affect chickens, turkeys, ducks, geese, pigeons and many wild birds. The period of incubation (the time elapsing from the entrance of the germs into the body of the bird until the

spring hatched chicks are freer from the disease than summer hatched. This may be explained by the fact that hens with diseased ovaries gradually become poorer layers as the disease processes advance, and hence, only lay in late spring or early summer, when nature intends reproduction of birds. Finally the hen may cease laying.

Symptoms: Coccidian Form.—The symptoms, as I have seen them, are similar to those of the bacillary form, excepting, as a rule, the heavy death rate takes place later.

Mode of Spread: Bacillary Form.—Ovaries of laying hens, diseased, but still functionating, may be infected by the germ. The germ can be isolated, particularly from the yolk, of at least some of the eggs formed in such an ovary. The chicks from infected eggs, as a result, have the disease more or less developed when they are hatched, as conditions which favor hatching also favor the multiplication of the germs to an extent that toxins (poisons) have already been produced in the young in sufficient quantity for the disease to at least manifest itself in a few hours after hatching, although ordinarily they do not begin to die until they are about a week old.

The whitish, frothy, pasty bowel discharge, more or less sticky and having a tendency to "paste up the vent," from these chicks is laden with the germs, and others of the flock soon become infected from contaminated food picked up from the ground. In the former case, chicks may begin to die soon after hatching, in the latter, in from three to four days, a few dying each day.

The death rate is high, reaching in many cases as much as seventy-five per cent or more. Those

FOUR SAMPLE PAGES (REDUCED) FROM "POULTRY DISEASES AND THEIR TREATMENT."

ptomain poisoning occurs chiefly in mid-summer, and on farms were the fowls have an extended range, including patches of high weeds that effectually conceal dead animals from the caretaker, until the loss of a large portion of the flock compels cutting weeds and a diligent search for the carcass.

The beginning of ptomain poisoning in a flock is usually something like this: During very hot weather a bird dies in the tall weeds, it may be from disease or from violence, and in three or four days its carcass is filled with maggots and in an advanced stage of decomposition; it is found by the other birds and devoured, with the consequent death of many of them, some of them dying in out of the way places and remaining undiscovered by the keeper, and in turn poisoning others, and so on.

Oftentimes the keeper is responsible for the beginning of the trouble by thoughtlessly throwing some small animal which he has killed (opossum, weasel, rat, etc.) where the fowls find it. If the weather conditions are favorable to rapid decomposition, ptomain poisoning in the flock will result and the "vermin" dead will destroy more birds than ten of its kind would destroy during life.

Maggots are usually found in the crops of birds dying from eating putrid flesh, and if the poultryman holds autopsies on the dead birds, he is quite apt to conclude that the maggots have killed them. Such is not the case.

Report of a Case of Ptomain Poisoning

In one flock there were twenty-four hens. A can of spoiled corn that had been left sitting in the basement, in a glass container, with top removed, was given to the birds at 11

not lay. If the obstruction is well along in the egg canal the egg may be felt as a hard object in the posterior part of the abdomen. In many cases the obstruction is so far up the oviduct it cannot be felt or seen and we must depend for diagnosis upon the action of the bird, which suffers acutely under these conditions.

Treatment.—First be sure that the bird will not lay the egg unaided. Allow her to remain quiet and alone for a couple of hours; she will often relieve herself unaided. If it is evident that the bird must be given help, wash the hand carefully with soap and water and lubricate the fingers with three to five per cent carbolized vaseline, which can be secured at any drug store, pass the fingers through the anus and cloaca into the egg canal and remove the egg. At times the egg is large and it may be necessary to break the shell in order to remove it. If the egg is broken, make sure that all parts of the shell are removed. By referring to Plate I the relations of these organs may be seen.

After the removal of the egg give the hen a tablespoonful of olive or castor oil and place on a light feed for a few days. Recovery usually occurs in the simple uncomplicated cases which form the majority; in complicated cases death is often the result.

Rupture of the Oviduct

This is usually a complication of obstruction of the oviduct. It is frequently fatal in a very short time and in such cases can be diagnosed only upon postmortem examination.

Cause.—Vigorous contraction of the muscular walls of the egg canal in expulsion efforts some-

tion of the air sacs causes the difficult breathing and asphyxiation.

Inflammation is evident in the diseased areas. Sections through these areas of disease show the mycelia (thread-like branches of the mold) and the characteristic fruit (spores). Focal necrosis, preceded by cloudy swelling, is noted in the kidneys and other vital organs. A secondary invasion of pus-producing organisms may take place and on autopsy abscesses may be found in the liver, kidneys, spleen and other organs.

Treatment.—This is a difficult problem. Placing the affected birds in a close box and smoking them with tar has been advocated. Efforts should be made to eradicate the disease from the premises by cleaning and disinfecting them as for roup and other infectious diseases. (See pages 24 and 153.)

Swell-Head in Young Turkeys

The most characteristic symptoms of this ailment is swelling of certain parts of the head, especially in the region of the maxillary or infraorbital sinus, which becomes filled with a gelatinous, colorless substance. (For location of this sinus see Plate I, No. 31.)

These swellings may disappear in a few days or weeks or may remain for several months. In the latter instance the swelling may contain a cheesy material of foul odor, and in some cases cause death.

Treatment.—Open the swollen part and allow the morbid collection to drain out. In addition, use the same treatment as outlined under roup. (See page 153.)

(vertebra) and just back of the ribs (thorax); that the tortuous oviduct or egg canal in which the egg develops lies close to the back. This means when a laying period is on more room is needed by the ovarian mass, as well as by the active oviduct. Consequently the adbominal organs settle more to the bottom of the cavity and the shape of the body of the bird changes. A

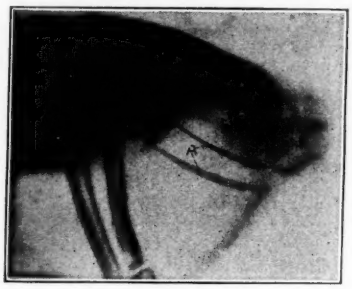

FIG. 52. SKIAGRAPH OF NORMAL HEN
A, Pubic bones. B, femur (pulled back). The distance between the pubic bones indicates whether or not the bird is laying.

laying hen is a good feeder. Out early in the morning, late to go to roost, red comb, always hunting bugs and other food, singing, happily disposed and usually has a full crop. The non-layer does not brave the storm and rain, goes to the roost early, leaves it late in the morning, is a poor feeder and not happily disposed—a sort of drone.

Kaupp's Poultry Diseases

Poultry Disease and Their Treatment by B. F. Kaupp, M. Sc. D. V. M., Edited by D. M. Campbell, D. V. S., Editor of the *American Journal of Veterinary Medicine.*

Just Issued

Prof. Kaupp's new work gives a brief but adequate presentation of this subject in a manner practical for veterinarians.

It takes up first the anatomy of fowls, giving a brief description of the visceral organs with illustrations of each. Then follow in order very complete sections on Sanitation, External Parasites, Internal Parasites, Diseases of the Digestive Tract, Diseases of the Blood, Constitutional Diseases, Diseases of the Liver, Diseases of the Ovary, and Oviduct, Tumors, Respiratory Diseases, Diseases of the Feet and Legs, Diseases of the Brain, Bacteria of the Intestinal Tract, The Egg, Isolation of Nonlayers, Malformation and Fractures-wounds-anesthesia.

The work is profusely and splendidly illustrated; both common and technical names of diseases and parasites are given. The binding is of the best.

This work has received a remarkably cordial acceptance at the hands of veterinarians and instructors in Agriculture Colleges. Many hundreds of copies were sold on advance orders; as soon as they were delivered we were fairly flooded with letters praising it. The letters regarding this book, printed last month, are typical of hundreds of endorsements this book has received. Reread them.

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EVANSTON, ILLINOIS.

out by these students was the variability of these sinuses in two horses of the same age and the greater variability in horses and mules of different ages. From the sections of specimens of heads it is clearly demonstrated that in most instances it was not necessary to puncture or make an opening in the turbinated bones in order to drain the facial sinuses. It was pointed out that in all or nearly all cases that these sinuses could be drained by trephining the dependent parts, making the opening very large so that the fingers could be inserted and all partial bony partitions would then be broken down and thus permit complete draining.

Dr. N. S. Mayo gave a number of very interesting and valuable talks and one paper. He told Veterinarians how they could help suppress and eliminate fake cure-alls and the advertisements of cure-alls. He also read a paper on internal anteseptics, paying particular attention to Iodine and its compounds Methylene Blue, Quinine, Carbolic Acid and Salicylic Acid. His talks and discussions were most interesting and valuable.

How and When to Use a Stomach Tube was the topic of a paper by Dr. I. S. MacAdory. This paper brought out a general discussion on colic, indigestion and gastritis which was entered into by Drs. Jago, White, Mayo, Scully, Salter, and Andrade.

The Differential Diagnosis of Black Quarter and Malignant Edema was rendered by Dr. C. W. Ferguson. Drs. Mayo and White claimed that they had never seen a case of Black Leg in an animal over two and one-half years old. Dr. Mayo said that he had seen it in many sucking calves and it occurred mostly between the ages of six and eighteen months. He regarded it usually as a high land disease rather than as an exclusive low land disease.

Dr. Scully of Georgia gave a short talk on the differences between the ordinary practices in the north and in the south. Dr. G. A. Roberts of North Carolina gave a brief talk on the effects of feeding cotton seed meal to hogs and the use of iron sulphate to correct its destructive action. Dr. H. J. Douglas of New Orleans described his method of preventing and treatment laminitis by the use of alum and adrenalin chloride. He advised two ounces of pulverized alum in capsule or ball and follow that with one ounce three or four times a day. He also advised that some times it was valuable to use adrenalin chloride. His method of treatment was for acute cases. He did not attempt to explain the physiological or therapeutic ac-

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tion of alum. All he claimed for it was the results which were usually good.

The next paper was on Emphysema by Dr. C. A. Cary. He stated that Emphysema was due to obstruction of expiration leading to raised intra-alveolar pressure, decreased capillary circulation, malnutrition of the air sacs and diminished elasticity of the alveolar walls. The obstruction of bronchi may be due to narrowing of the lumen by spasmodic contraction or spasms of the muscles of the bronchus from nervous irritation, by inflammatory thickening of the bronchial walls, by a viscid exudate in the lumen or by obstruction to expiration in the larynx or other parts of the air passages. The opinion was expressed that ordinary dust in well cured hay had little or nothing to do as a cause of Emphysema.

It was suggested that a chemical substance or some bacteria or fungus, that was at its height during the curing process of hay, acted on the nervous system, either by way of the stomach or air passages and produces spasms of the bronchi. Do not confound the dust irritants that exaggerate the action of an established case with the real cause.

Dr. A. H. French gave a very interesting and instructive talk on distemper in dogs. There was a varied opinion concerning acquired immunity to dog distemper. Dr. French and Dr. Douglas claimed that they had seen several attacks in the same dog while Dr. White stated that one attack in Tennessee gave permanent immunity.

The following officers were elected for the ensuing year: Dr. W. B. Nixon, Demopolis, President; Dr. J. S. Andrade, Huntsville, Vice-President; Dr. C. A. Cary, Auburn, Secretary-Treasurer.

Upon the adjournment of the Alabama Association a temporary Inter-state organization was formed. Dr. G. R. White of Nashville was elected President, Dr. C. A. Cary of Alabama was elected Secretary-Treasurer. The object of this Association was to discuss ways and means by which the Southern Veterinarians could make the New Orleans meeting a success. Dr. F. J. Douglas of New Orleans first discussed the subject of the Clinic. He stated that arrangements had been made with the Exposition Association to hold the clinic in their auditorium. He also stated that the New Orleans Veterinarians had ample clinical material.

The next subject discussed was the subject of new members from the south. It was decided that each Southern State Association and each member of the American Association in the south should round-up all the available and qualified Veterinarians in the south and get them to join the

American Association at the New Orleans meeting.

The next topic for discussion was the financial question. Dr. G. R. White suggested that each State Association should be called upon to contribute and each member of the State Associations should likewise be requested to contribute. It was next decided that the funds subscribed by the various states in the south should be put in a bank in each state, subject to the call of the committee in charge of the entertainment at New Orleans.

As a result of the discussion the following committees were appointed: 1. Finance, Dr. G. A. Roberts of Raleigh, N. C., Chairman. 2. Membership and Publicity, Dr. G. R. White of Tenn., Chairman. 3. Entertainment, Dr. C R. Jolly of Atlanta, Chairman. 4. Transportation. Dr. C. A. Cary of Alabama, Chairman.

These committees are to confer with the various State Associations and local committees and arrange for the entertainment at New Orleans.

This temporary Association of Southern Veterinarians adjourned to meet at New Orleans one to two days ahead of the American Association.

The second night of the meeting March 6, the Veterinary Medical Association of the Alabama Polytechnic Institute entertained all the visiting Veterinarians at a banquet in Smith Dining Hall. There were about 125 in attendance at this banquet and all in attendance voted it a great success and the visitors extended their most hearty thanks to the Veterinary Students for the most hospitable and social occasion.

The last day was devoted exclusively to clinic at the Veterinary College of the Alabama Polytechnic Institute. This clinic began at nine A. M. and lasted until 5 P. M.

Dr. G. R. White, of Tennessee, first gave two demonstrations in castration. He castrated a five year old stallion standing and then a two year old stallion restrained by his special method for restraining colts. Drs. Jolly, Dean and Bahnsen next examined three cases of fistulous withers. Dr. Jolly operated on one of these which had a deep cavity running downward and forward anterior to the first one or two dorsal spinous processes. He opened this cavity at its lowest point anterior to the upper third of the scapula. He advised drainage by use of the Seton or drainage gauze.

The next was a case of lameness, the diagnosis of which was made by Dr. A. J. Douglas. Some dispute arose as to the correctness of the diagnosis and Dr. Douglas anesthetized the parts with cocaine and

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proved that he was correct in attributing the cause to ring bone.

A case of chronic emphysema was exhibited and diagnosis made by Dr. Jago of Athens, Ga. Dr. Mayo suggested that this case be treated by the arsenic-atropine method.

A case of dumb rabies in a bull pup was exhibited by a Senior Veterinary Student, Mr. Willbanks. This pup exhibited paralysis of the lower jaw, inability to swallow and the characteristic expression.

A case of bastard strangles in a 5 year old mare that was in the Veterinary Hospital was exhibited. This mare had a post pharyngeal and sub-parotid abscess. This abscess had been opened by way of Virborg's triangle, drained and flushed and kept open by antiseptic gauze.

An obscure case of lameness in a mule was the subject of much discussion by Dr. Roberts, Jolly, Bahnsen and Douglas. It was finally decided that the case should be treated for muscular trouble in the post brachial region.

A suppurating schirrus chord in a mule was removed by Dr. C. A. Cary. The animal was restrained by Dr. White, the large chord dissected up to the external inguinal region; cut off by an ecraseur. The cavity was packed with sterilized gauze held in place by stitching the wound with continuous sutures.

Castration of cryptochid hog by Dr. G. White. This hog was hung up by hind limbs and the abdominal opening made into the abdomen a little to one side of the median line. With the hog in this position Dr. White claims that the abdominal organs are by gravitation dropped out of the way.

Following this Dr. White inoculated twenty hogs with serum and virus by the method as practiced in Tennessee.

By the use of a college "Sub" Dr. C. A. Cary illustrated the roaring operation with the animal standing. This operation was done with the use of cocaine subcutaneously over the laryngeal region and cocaine was placed in the ventside by a cotton swab. The animal suffered no pain or irritation during the operation.

Dr. P. P. Bahnsen carefully demonstrated his unique method of casting and restraining horses and mules by means of a single rope. He cast a mule, put it in position for castration and for foot and body operations.

Three cases were exhibited in which the low tenotomy operation had been done some weeks or months previously by Dr. C. A. Cary. Each one had been permanently benefited and put into a workable condition.

A horse was shown that had recovered from the new operation for paralysis of the

penis. A six inch cuff of prepuce had been removed pulling the end of the penis up within three inches of the opening of the sheath. If two more inches had been removed from the prepuce the operation would have brought about perfect results.

Auburn, Ala. C. A. Cary,
Secretary-Treasurer.

EXIT THE MISLEADING GUARANTEE.

The Department of Agriculture is sending individual official notices to over 58,000 manufacturers that on May 1, 1915, their guarantees filed under the food and drugs regulations will be stricken from the files and that thereafter the serial numbers assigned to such guarantees must not be used on the label or package of any food or drug. This action is in accordance with the regulations adopted on May 5, 1914, by the Secretaries of the Treasury, Agriculture and Commerce, which abolish the use of the guaranty legend and serial number on foods and drugs. The ground for this action was that the legend "Guaranteed by (name of guarantor) under the Food and Drugs Act, June 30, 1906," was understood by many consumers to mean that the Federal Government had passed upon and certified the excellence of the article so labeled, whereas the legend and serial number were merely a guaranty on the part of the manufacturer to his dealer that the manufacturer would assume full legal responsibility for his goods.

In the meantime from the records it appears that 58,816 manufacturers have filed guarantees and obtained serial numbers, the last number issued being 58,816.

The notice advises manufacturers that after May 1, 1915, guarantees should not appear on the label or package but should be incorporated in or attached to the bill of sale,

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Your serum cannot radiate over a hog. Why, sirs, don't you know that a rattle snake as big as your arm can sleep and does sleep in the brush with a hog and bite him all night and the hog doesn't wake up but sleeps and dreams pleasant dreams all the time. The snake is trying to put serum in

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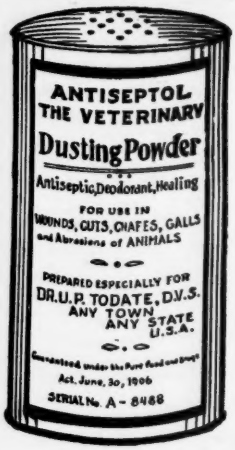

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